HEALTH OUTCOMES OF MOTHERS AND INFANTS FOLLOWING EARLY HOSPITAL DISCHARGE

by

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ABSTRACT

This study investigated the health outcomes of mothers and infants following early hospital discharge. Nineteen women who self-selected early discharge time within 24 hours of giving birth, 20 women who chose a discharge time between 25 and 48 hours and 20 women who selected to leave the hospital after 48 hours of delivery participated in the study. At 2 weeks postpartum, the health status of mothers and infants was assessed and information regarding demographics, reasons for selecting the length of hospital stay and women's recall of health care teaching were gathered by questionnaire. Results showed a statistically significant decrease in the incidence of subjective maternal fatigue and fewer postpartum problems for mothers choosing an early discharge time compared with the later discharge group. Although there were no significant differences among the three groups of infants, the incidence of clinically-apparent jaundice was higher among infants who left the hospital within 48 hours. Women who went home within 2 days of delivery did so because they had inadequate medical insurance. Health care teaching and recall of instructions were similar in all three groups.

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CHAPTER I

INTRODUCTION TO STUDY

Introduction

Early hospital discharge of postpartum women and newborn infants has increased significantly in the United States during the last decade. Consumer demand for hospital-based, family-oriented maternity programs has influenced hospitals to develop alternative birthing concepts that generally include discharge in less than 24 hours after giving birth.

Preliminary research on maternal-infant health outcomes has demonstrated the physiologic safety of these programs when follow-up home nursing care is provided after discharge (Avery, Fournier, Jones & Sipovic, 1982; Britton & Britton, 1984; Guerriero, 1943; Jansson, 1985; Lemmer, 1985; McEwan, 1964; Mehl, Peterson, Sokolosky & Whitt, 1976; Nabors & Herndon, 1956; Power, Wolf, Van Coeverden & de Groot, 1980; Rollins et al., 1979; Scupholme, 1981; Yanover, Jones & Miller, 1976). The majority of the cited research consisted of single-group descriptive studies and static-group comparisons of one early discharge group with a later discharge control group. There has been no documented research on

maternal-infant health outcome comparisons based on the time of discharge that involve an early and middle discharge group compared to a later discharge group.

Although childbirth is considered a normal physiologic process, it is also a stressful and vulnerable period that encompasses the potential for both crisis and growth. Early discharge can add to the stressors faced by women and their expanding families. Orem's self-care theory for nursing (1971) and Kobasa's hardiness construct (1981) can assist professionals in expanding the potential for growth of the family of early discharge women after childbirth.

The phenomenon of early hospital discharge of postpartum women creates several questions for nursing. When is the best time for health care professionals to recommend leaving hospitals after childbirth? How can new parents be made to feel more confident about early discharge? How can family-centered maternity units better meet the learning needs of new mothers in a shorter period of time? Is there a need for improved home follow-up care and stricter discharge criteria for those women choosing an early discharge?

Purpose

The purpose of this study was twofold: (a) to assist health care professionals in determining the best time for early discharge of low-risk postpartum women and their

healthy term newborn infants; and (b) to facilitate parents in feeling more confident when leaving hospitals early following childbirth.

Problem Statement

With the current trend in the United States of discharging mothers and infants as early as 2 to 4 hours, and generally less than 24 hours postpartum, health care professionals have legitimate concerns regarding the safety of their outcomes. As stated in the introduction, most research that has been done regarding the physiologic effects of early postpartum discharge concludes that early discharge with home follow-up care is safe for both mothers and newborns.

In studies that measure human outcomes, it is important for health professionals to be cautious in their interpretation of statistical outcomes. Hellman, Kohl and Palmer (1962) found no statistical differences in outcomes among mothers and infants who were discharged early. Yet there was a slight increase in postpartal maternal bleeding and a slower uterine involution time in the early discharge group. Although there were more subjects in the control group than the early discharge group, four newborns died in the group discharged early, while there were no infant deaths in the control group. Hellman et al. (1962) were concerned about the clinical significance of early discharge. The author cautioned that neonatal

jaundice and congenital heart problems could go unnoticed should infants be sent home too early following birth.

Goodlin (1980) was able to document a statistically significant greater incidence of maternal infections and readmission rates among newborns discharged between 4 and 8 hours after childbirth compared to controls. Among newborns discharged early, there was a greater incidence of meconium aspiration and sepsis.

With increasing concern over possible hazardous effects of early discharge on infants, the Committee on the Fetus and Newborn of the American Academy of Pediatrics published an official report in 1980 (p. 651) warning that there was "...an element of risk in early discharge." In 1983, the Academy of Pediatrics, together with the American College of Obstetricians and Gynecologists, published a joint statement (AAP/ACOG, p. 81) recommending that "...it is preferable for healthy neonates to remain in the hospital more than 24 hours." They emphasized the essential nature of close observation for problems during the first 3 days of life with the rationale that "...approximately one third of the neonates who require intensive care come from the population of newborns who were free of problems at birth" (p. 82).

Britton and Britton (1984) found that, excluding jaundice, if an infant has a normal transitional period (the first 6 hours after birth), there is a .7% chance the

infant will be rehospitalized. In this study, however, less than 20% of the infants were sent home earlier than 24 hours. In 1986, with so many neonates leaving hospitals in less than 12 hours after birth, it is not possible to generalize Britton and Britton's findings to this early discharge population.

Another area of concern is the problem of inconsistent home follow-up care after early discharge. McIntosh (1984) noted that research done on the outcomes of mothers and infants following an early discharge included home nursing follow-up, but in reality, more patients were going home early without the benefits of close follow-up practices.

The research problem, as derived from the clinical problems, was to identify the effects of early hospital discharge on subsequent health outcomes among low-risk women and their healthy term infants during the postpartum period.

Review of Literature

There are four major topical areas that need to be addressed for an adequate discussion of the relationship of early hospital discharge to maternal and infant health outcomes. These areas consist of the following: (a) consumer motivation for demanding alternative birthing practices which subsume early discharge; (b) previous studies on the phenomenon of early postpartum discharge

which include: description and results, eligibility criteria, maternal-directed health care teaching and methods of follow-up care; (c) normal maternal changes during the puerperium; and (d) neonatal transition following birth.

Consumer Motivation for Demanding Alternative Birthing Practices Which Subsume Early Discharge

Significant changes in maternity care have taken place in this country over the last 20 years. They began with the natural childbirth movement in the late 1950s. This movement promoted educational preparation for childbirth and was endorsed by Dick-Reed advocates (Dick-Reed, 1956). This was followed by the Lamaze method for painless childbirth, promoted and advanced by the American Society for Psychoprophylaxis in Obstetrics (Karmel, 1959). Maternal-infant touch and attachment theory was studied by Rubin (1967) and Ringler, Kennell and Jarvella (1975), who commented that the capacity for mother-infant attachment appears to be very sensitive during the earliest hours after birth and that this may have profound long-term effects. The Leboyer methods have more recently captured public interest. Leboyer (1975) demonstrated the enhancement of the physical and emotional status of the infant through gentle handling. Studies by Bowers, Brockbill and Conway (1970) and Klaus and Kennell (1976) stressed the importance of analgesia-free natural child-

birth with adequate time for parent-infant bonding.

Two additional factors influencing maternity practices have been the increasing costs of childbirth in hospitals and consumer demand for control and participation in the childbirth experience (Walker, Yoffe & Gray, 1979). "It seems that where consumers go, providers will follow" (Green, 1984, p. 42). Recognizing this research and documentation, but fearing an increase in maternal-infant morbidity and mortality rates due to an increase in the home birth movement, the American Medical Association (AMA) released a formal statement in 1977 encouraging medical staff to reevaluate their hospital practices and current policies (DeVries, 1983). In 1978, an inter-professional task force was formed by several medical and nursing associations. They prepared a joint statement in support of family-centered maternity and newborn care.

These statements, the home birth movement and consumer pressure have stimulated hospitals to create alternative birthing plans within hospitals. Rather than conceptualizing alternative birthing centers (ABCs) as physical entities, it is preferable to regard them as "concepts" that accommodate consumers' demands for less expensive and more flexible methods of childbirth (DeVries, 1983). Alternatives for childbirth may include any of the following: allowing fathers and support persons in the delivery room, women's choice in delivery

positions and family-infant contact immediately after delivery. The typical ABC allows a woman to labor, give birth and recover in the same bed and in the same homelike setting with a minimum of hospital routines (Lubic, 1976; DeVries, 1983). Additionally, ABCs permit family and friends the privilege of participating in the birth experience (Lubic, 1976). An integral and essential component of the many variations of the dynamic ABC movement is early hospital discharge of mothers and infants. With the home increasingly replacing the hospital as the place of care and recovery, the consumer is taking on the added responsibility of self-care. Often, follow-up nursing care is arranged in the home.

According to Rollins et al. (1979), most consumers perceive the ideal labor and delivery experience as one with minimal anxiety and intervention, but with maximal attention focused on meeting the family's psychological needs. Jones (1978) and Yanover et al. (1976) conducted large-scale surveys of women's desires regarding childbirth. Most women wanted individual attention, breastfeeding, father participation, choice of analgesia, more information and decision-making regarding hospital procedures, minimal separation from the newborn and family and less fragmentation of professional care during early infancy. Jones (1978) studied the types of families who choose alternative methods in childbirth. The researcher

found these people to be English-speaking, better educated and with few relatives living nearby. Most attended childbirth education classes, desired to breastfeed and planned their pregnancies.

There are many advantages to sending mothers and infants home early after delivery which include: lower costs, reduced risk of hospital-acquired infection and shorter periods of hospital-imposed restrictions (feeding routines and short visiting privileges). In addition, early discharge tends to enhance parent-infant bonding, lessens disruption in family routines and is conducive to early ambulation (Jansson, 1985; Nabors & Herndon, 1956; Ringler et al., 1975; Theobald, 1959).

Despite the advantages of alternative birthing practices which include early discharge, many ABC advocates are unimpressed with current hospital maternity offerings. Many ABCs are "dressed-up delivery rooms without the commitment to childbirth as an emotionally satisfying event" (Green, 1984, p. 57). According to DeVries (1983), there is a real lack of promotion and publicity about the availability of ABCs. In some hospitals, strict criteria for use of birthing rooms make most women ineligible (Green, 1984) and few hospitals have adequate staff and space to accommodate ABC rooms.

In the United States, ABCs have attracted between 2.5 to 15% of maternity patients (DeVries, 1983), when at

least 40% (Johnson, 1983) to 60% of these could be born in short-stay birthing suites or centers (DeVries, 1983). Regan (1984) documented that maternal-infant use of an early discharge program (that includes an ABC) is feasible and safe if there is a prepared family, intensive observation of mother and newborn during the immediate recovery period, strictly adhered to discharge criteria, skilled home follow-up care during the postpartum period and physician backup for visiting nurses.

> The extent to which hospitals and physicians have participated in these changes [alternative birthing concepts] may well be medicine's most frank concession to consumer demand (Green, 1984, p. 43).

Because birthing alternatives represent a cost savings over traditional childbirth practices, insurance companies have strongly endorsed this trend. More hospitals are including many of the ABC changes and consumer choices into their policies. However, the dynamic movement also places more responsibility on nurses to increase their knowledge and skills as they respond to the new challenges of this changing mode of health care delivery.

Previous Research on the Phenomenon of Early Postpartum Discharge

Description and results. Due to overuse of postpartum hospital beds in the 1940s and 1950s, women and babies occasionally left United States' hospitals sooner than the traditional 8 to 10 day stay. Guerriero (1943)

was the first to document the effects of early hospital discharge on postpartum women. Inadequate hospital staff and an overcrowded postpartum department stimulated the descriptive retrospective chart review involving 2926 women over a 12-month period who were discharged from a New Orleans hospital between 2 and 5 days after giving birth. Guerriero found that only 30 women developed complications requiring medical attention. Of these, 3 needed readmission--1 for "sapremia" and 2 for "pyelitis." The remaining 27 had breast complications and were treated in the home by visiting nurses. Guerriero concluded that early discharge with follow-up nursing care was safer and more economical than home delivery and that this practice was a good solution for overcrowded hospitals.

A second retrospective descriptive study was conducted by Nabors and Herndon (1956). The birth rate in a Dallas hospital nearly doubled in the 6 years preceding 1950 without a concurrent increase in bed capacity. The authors felt that since more than 50% of maternal deaths occurred at or shortly after birth, an adequate discharge program must provide maximum protection at this time. Over a 4-year period, 6608 women and neonates were released on the average of 24 hours following delivery. Occasionally, they were released as early as 8 hours postdelivery. One hundred and seven women (1.6%) were readmitted; 93 cases were due to infection. Of these,

there were 44 cases of endometritis or parametritis, 34 cases of mastitis, 10 cases of pyelonephritis and 3 cases of infected episiotomy sites. Fourteen women were readmitted for late postpartum hemorrhage and 5 were readmitted for thrombophlebitis. In addition to early discharge with home follow-up care being considered a safe procedure, Nabors and Herndon concluded that this practice was conducive to early ambulation, provided automatic rooming-in and helped the father to better assist with infant care.

In 1953, the New York City Obstetrical Advisory Committee realized that the usual 7 to 10 day postpartum hospital stay, felt to be proper by many obstetricians, was not based on any sound scientific investigations. Beyond clinical impressions, there was no reason to support this tradition. In the midst of a severe shortage of postpartum bed space, the Committee officially recommended that the standard maternity stay be reduced to 5 to 7 days. With the birth rate approaching 6200 annually in one Brooklyn hospital, Hellman et al. (1962) conducted a study on the effects of reducing the maternal hospital stay to 2 to 3 days. The authors conducted a quasi-experimental study and recorded both maternal and infant outcomes. The control group consisted of 316 women and their infants who were discharged on the 5th postpartum day. Of the 194 women and infants in the earlier-dis-

charge group, the average stay was 2.3 days. Although there were no statistical differences in outcomes for the two groups, there was a slight increase in maternal bleeding, a slower uterine involution time and less breast engorgement in the group of women discharged early. Among the infants in the shorter-stay group, there was an increased incidence of heat rash and jaundice. Four babies in the earlier-discharge group died: one with mild aspiration at 35 days, one with sudden death at 16 days, one with bronchopneumonia at 11 days and one with a congenital heart defect at 3 days of age. Only about 50% of the women were satisfied with the early discharge experience. Although the researchers did not address the issue of prenatal and postnatal instruction among participants, a statistically significant finding was the increased need of women in the early discharge group for information, reassurance and advice over women in the control group. When questioned about their preferred length of hospital stay, women in the control group wanted a stay of 2.7 days, while women in the earlier-discharge group would have preferred a stay of 4 days. No reasons were cited for the women's preference. Hellman, et al. listed their overall conclusions as: (a) almost all mothers and babies in the longer-stay group did better than the shorter-stay group, although these findings were not statistically significant; (b) there was a concern

that jaundice might go unnoticed if babies were sent home early, although daily nursing visits could eliminate this as a problem and (c) because babies who went home early were seen less by pediatricians, a baby with a congenital heart problem could go unobserved if sent home early.

In the early 1960s, a 10-day postpartum stay in British hospitals was typical. It was felt that an earlier discharge would be detrimental to the success of breastfeeding, but there were no data to support this hypothesis. In 1964, McEwan conducted a prospective study involving 1044 women and their babies among a population of Europeans, West Indians and Asians and followed their course for a period of 2 months after being discharged between the 1st and 5th postpartum day. There were no maternal deaths; 4 mothers were readmitted; 13 were treated at home. There were 2 newborn deaths; 4 were readmitted and 25 were treated at home. McEwan concluded that early discharge is not harmful for women and babies. Interestingly, it was determined that successful breastfeeding among the Europeans was highest in the group discharged between 1 and 3 days.

Although there were only a few studies on the effects of early postpartum discharge in the 1960s, several such studies emerged in the 1970s. Yanover et al. (1976) evaluated a comprehensive family-centered program for safety, economic feasibility and patient satisfaction. The

prospective static-group comparison study involved perinatal care for low-risk mothers and infants who were released as early as 12 hours postdelivery. The study group consisted of 44 subjects with a control group of 44 mother-infant dyads who received traditional care. Twenty-one women went home within 24 hours, but there were no controls for this group. Yanover et al. (1976) found no statistical differences in numbers or types of morbidity during the postpartum hospital stay or during the 6-week puerperium. The expense of the family-centered program, which included follow-up nursing visits for up to 4 days postpartum, was nearly equal to the traditional childbirth program. The family-centered program was well accepted by participants in both groups. A limitation of the study was the lack of separate data on morbidity and patient satisfaction based on the length of the hospital stay.

Mehl et al. (1976) credited the higher demand for early postpartum discharges to an increase in nonmedicated deliveries. The authors' belief was that these women did not need time to recover from obstetric analgesics and anesthetics. Most women in the study cited the inability of the institution to provide rooming-in for fathers, friends and siblings as the primary reason for requesting an early discharge. Study participants were 130 well-nourished Caucasian women who met criteria for discharge

in 2 to 3 hours after delivery. Another 38, who desired an early discharge but did not meet the criteria, served as controls for the static-group comparison descriptive study. Women in both groups had taken infant care classes and most women in both groups had attended college. Factors compared included labors, deliveries, the 1st 2 hours postpartum, the incidence of maternal-infant complications during the 6-week puerperium, cost effectiveness and patient satisfaction. In most cases, home follow-up was established by nurse practitioners on the day of early discharge and totaled 3 daily visits. There were only two cases of maternal complications in the early discharge group--one incident of postpartum hemorrhage and one case of endometritis. Among the infants, there were no cases of jaundice needing treatment, all infants in both groups had gained weight within the 1st week and 1 infant in the control group died of sepsis and meningoencephalitis. Interesting ancillary findings were: infants of multigravidas in the early discharge group had higher 1 and 5 minute Apgar scores than control infants; 3-day-stay infants had more neonatal problems, including fetal distress during labor and early discharge mothers received their milk supply within 36 to 72 hours, while mothers in the longer-stay group received their milk supply within 72 to 120 hours. Mehl et al. attributed these unexpected findings to the probability that demand

infant feeding schedules were better established and there were greater comforts available to nursing mothers at home. The average cost for the short-stay birthing plan was $375 and 3 fewer days in the hospital fostered a savings of $550. Patient satisfaction for the early discharge birthing experience was high. Mehl and associates cautioned that these findings could not be generalized to women who did not receive infant care classes, women from lower socioeconomic backgrounds, or women not followed by nurse practitioners.

Rollins et al. (1979) undertook a retrospective chart review involving the outcomes of 190 infants discharged in less than 12 hours after being delivered by family practice residents in the homestyle delivery program at the University of California-Davis Medical Center. The mean Apgar score at 1 minute was 8 and at 5 minutes was 9.3; mean hospital stay was 7.5 hours; 4 newborns were admitted to the nursery after delivery but before discharge; 7 newborns were readmitted after discharge with the following conditions: 4 were jaundiced, 1 was dehydrated and 2 had transient tachypnea. One hundred and seventy-nine of the infants (94%) remained in good health through the first 2 weeks following birth. Rollins et al. concluded that an early infant discharge plan was safe for neonates.

In contrast to other researchers who generally

studied middle-class Caucasian women and infants, Power et al. (1980) conducted a descriptive study involving 323 black, lower socioeconomic, poorly educated South African women who were discharged from 6 to 48 hours following delivery from a hospital in Capetown, South Africa. Demographic data included: mean age of 24.8, 72% percent had less than a high school education and 34% were either unmarried or not living with the infant's father. Postpartum nursing care was performed in the homes for the 1st week and data were collected by structured interviews on or before the 12th postpartum day. Information regarding views of delivery and current problems with themselves and their infants was obtained. Forty-five of the mothers (14%) believed they had problems. Of these women, 9% were tired, 7% had backaches, 7% had abdominal pain, 5% had headaches, 16% had increased vaginal bleeding and 15% had breast discomfort. Each mother responded to direct questioning regarding what she thought about her infant's physical condition. Fifty-two mothers (16%) believed their infants had "sticky" eyes. Eight of these infants were treated for this problem as outpatients. Seventy-one mothers (22%) thought their infants were jaundiced. Of these, 45 did not require treatment, 18 were treated as outpatients and 2 were hospitalized for phototherapy. Power et al. concluded that the increasing trend toward early postpartum discharge of mothers and

infants did not create additional problems during the early puerperium.

Goodlin (1980) was the only researcher able to document statistically significant higher readmission rates among newborns discharged early, in addition to a greater incidence of maternal morbidity within the same group. Goodlin conducted a prospective study on the effects of 500 low-risk women and their infants who were discharged early, and compared them to a similar population who remained hospitalized for the traditional length of stay. Mothers and babies were followed for a 15-month period after giving birth in an alternative birthing center (ABC) within a hospital. The average discharge time in the short-stay group was 4 to 8 hours postpartum. There were some significant differences in the rates of perinatal morbidity between infants in the two groups. The incidence of meconium stained amniotic fluid, congenital anomalies, central nervous system abnormalities, jaundice, polycythemia, scalp infections and subsequent child abuse were significantly higher among the infants delivered in the traditional delivery room. In the group of infants discharged early, there was a higher incidence of meconium aspiration and a higher readmission rate of 3.6% compared to .8% in the control group. Of those readmitted to the institution, there were 16 infants with dehydration and/or jaundice and 2 infants with unexplained

sepsis. Only one infant born in the control group was readmitted for sepsis. Maternal complications, most notably infection rates, were higher than expected in the early discharge group. There were 8 women (1.5%) who developed endometritis, 6 women (1.1%) with mastitis and 4 women who developed infected episiotomy sites. There were no similar maternal complications in the control group. Although the infant readmission rate was higher in the ABC group, Goodlin (1980) attributed the lower overall complication rate to the high degree of tranquility in the ABC (short-stay) group, more positive maternal attitudes and better birth preparation among this group of mothers. The ABC policy of placing infants on the mother's abdomen immediately following birth could have accounted for the lower incidence of polycythemia and jaundice. The absence of fetal narcosis in these infants may have accounted for the greater incidence of meconium aspiration in this group. The higher incidence of maternal morbidity was an unexpected finding and the author attributed this, most probably, to the hospital environment.

Scupholme (1981) conducted a descriptive study that involved women and infants discharged within 12 hours following birth. The author found perinatal and postpartum complications to be low, family satisfaction to be 100%, an average cost savings to be $500 to $600 and efficient utilization of available hospital beds to be

evidenced.

The maternal and infant outcomes following birth and discharge in 12 to 24 hours postpartum from a birth center within a university hospital were studied by Avery et al. (1982). In the retrospective study covering a 2-year period, it was found that maternal and infant complications were low and 93% of women felt comfortable going home early.

Britton and Britton (1984) were interested in the relationship of the infant's initial 6-hour transitional period after birth and future wellness. They studied 1735 term infants born in Tucson, Arizona. Less than 20% of these infants were discharged in less than 24 hours. The authors found that of the 91% of newborns with normal transitional courses, 97.9% remained healthy during the first 72 hours of life. Excluding jaundice, 99.3% remained healthy. In efforts to generalize these findings, the authors made the following conclusions: if an infant has a normal transition, there is a .7% chance the infant will require hospitalization for conditions other than jaundice; babies with abnormal transitional periods have a 28% chance of needing continued hospitalization; normal infant transitional periods are an excellent indicator of future wellness; since many transitional periods are, as the term implies, transitory, abnormal transitions are a poor indicator of future wellness.

Jansson (1985) undertook a prospective study of 674 mothers and their newborns who were discharged within 48 hours of giving birth. Only 3 mothers required rehospitalization--all for endometritis. A total of 9 infants were rehospitalized for the following: 7 for hyperbilirubinemia, 1 for herpes encephalitis and 1 for bradycardia. Through a home follow-up program, many social, economic and psychologic problems were identified, as well as physical complications. Jansson (1985) concluded that early discharge with thorough home follow-up care utilizing strict assessment and intervention guidelines was not only safe for mothers and infants, but in many cases, was superior to remaining in the hospital for longer periods.

Lemmer (1985) completed a study comparing 21 primipara and infant outcomes when discharged in less than 24 hours postpartum with 21 primipara women and their infants who remained hospitalized longer than 24 hours. Lemmer performed a maternal-infant assessment in each home between the 6th and 8th postpartum day. Lemmer found no significant differences in maternal outcomes in either group. Among the short-stay infants, 7 (33.3%) required an evaluation of their jaundice compared to 1 in the longer-stay group. Approximately 13% of the short-stay infants were evaluated by pediatricians earlier than usual, solely on the basis of their shorter hospital stay.

There were no other significant differences between either group of infants.

Eligibility criteria. The literature identifies maternal-infant early discharge criteria to be as diverse as the birth setting. In general, common criteria for early maternal discharge includes a history of a normal uncomplicated low-risk pregnancy and labor, a normal spontaneous vaginal delivery, no evidence of early postpartum hemorrhage or infection (normal vaginal discharge and a temperature less than 38 degrees C) and a blood pressure greater than 90/60 or less than 140/90 (AAP/ACOG, 1983; Avery et al., 1982; Rollins et al., 1979; Scupholme, 1981; Yanover et al., 1976). The woman must be able to ambulate and urinate without difficulty (Avery et al., 1982; Rollins et al., 1979; Scupholme, 1981; Yanover et al., 1976), have a hemoglobin greater than 10 gm/100 ml and a desire to leave the hospital early (Mehl et al., 1976; Scupholme, 1981). Mehl and associates described the added criteria of no obstetric medication usage during labor and delivery, with the exception of an anesthetic for the episiotomy. The study by Scupholme described additional criteria that would exclude a woman from an early hospital discharge: history of an underlying chronic medical disease, prepregnant weight greater than 230 lb, gravida (the number of full-term, viable pregnancies) greater than 5, age less than 18 if a primi-

gravida (first full-term, viable pregnancy) and under 16 years if a multigravida (two or more full-term, viable pregnancies). Other authors have stressed good physical and psychologic antenatal preparation, a demonstrated ability to provide self-care and infant care (AAP/ACOG, 1983; Avery et al., 1982; Hickey, DeRoeck & Shaw, 1977; Rollins et al., 1979) and a supportive home environment (AAP/ACOG, 1983; Avery et al., 1982; DeVries, 1983).

For an early infant discharge, the newborn must be examined and found to be normal and healthy, have a birthweight between 2.7 and 4.05 kg (6 to 9 lb), a gestational age between 37 and 42 weeks, a 1-minute Apgar score of 7 or greater, a heart rate between 110 and 150 per minute, a respiratory rate between 30 and 60 per minute and a temperature between 36.1 and 37.4 degrees C (97 to 99 degrees F) (AAP/ACOG, 1983; Avery et al., 1982; Nabors & Herndon, 1956; Scupholme, 1981; Yanover et al., 1976).

Early hospital discharge of infants would not be a consideration in the presence of marked heart rate irregularities, the presence of meconium-stained amniotic fluid and inadequate feeding and urination (Avery et al., 1982; Jones, 1978; Rollins et al., 1979; Scupholme, 1981). There should be no evidence of central cyanosis, excessive jaundice or blood type incompatibility (Rollins et al., 1979). Necessary laboratory results should include a negative syphilis and Coombs test (done if the mother has

type O blood or is Rh negative) and blood glucose and hematocrit values between 40 and 65%. Such tests are not usually done unless medically indicated (AAP/ACOG, 1983; Avery et al., 1982; Jones, 1978; Rollins et al., 1979; Scupholme, 1981). Finally, birth certificates should be signed and discharge instructions should be given to and reviewed with the family prior to discharge (Carr & Walton, 1982; Rollins et al., 1979).

Maternal-directed health care teaching. A comprehensive program for maternal-infant care planning and preparation consists of three phases: antepartal preparation, postpartum instruction and follow-up home care (Avery et al., 1982). Carr and Walton (1982) recommended directing postpartum teaching toward meeting the unique needs of families who choose early discharge. These needs generally consist of physical and psychosocial care. Other authors have suggested that the teaching staff begin instruction after the family has had the opportunity to interact with the newborn and the mother has had an adequate rest. Instruction criteria should be individualized (Avery et al., 1982; Carr & Walton, 1982; Hickey et al., 1977). Basic content of teaching programs should include the following: maternal self-care, nutrition, activity, exercise, sex and family planning. Infant care teaching should include: feeding, normal elimination, holding positions, hygiene, cord care, behavior and

activity characteristics (Avery et al., 1982). When applicable, return demonstrations should be performed by the mother or supportive family members (Avery et al., 1982; Hickey et al., 1977). Hickey and associates recommended demonstrations that reflect competence in infant feeding, dressing, bathing, positioning and basic knowledge of common newborn behavior patterns. In addition, the new mother should articulate knowledge in the areas of normal postpartum vaginal flow, signs of hemorrhage and actions to take when complications arise. AAP/ACOG (1983) stressed the importance of having mothers demonstrate the appropriate use of and ability to read a thermometer.

Methods of follow-up care. After an early postpartum discharge time of 3 to 48 hours, nearly all the reviewed studies described a system of home follow-up nursing care. The quantity of nursing visits varied greatly. Benrubi, Zabrek and Simon (1983) considered one home visit to be adequate. Two home visits were the protocol for studies by other authors (Ballard, Ferris, & Read, 1980; Carr & Walton, 1982; Goodlin, 1980). The majority of studies involved a standard of three home visit protocols (Hellman et al, 1962; Hickey et al., 1977; Jansson, 1985; Lubic, 1976; Mehl et al., 1976). The research by Yanover et al. (1976) involved four postpartum home visits. Daily follow-up visits were suggested by Power et al. (1980),

Nabors and Herndon (1956) and Regan (1984). Three studies included antenatal home visits for the purposes of assessing the physical and emotional climate, the quality of emotional support and the presence of a telephone within walking distance (Regan, 1984; Scupholme, 1981; Theobald, 1959). Two researchers recommended follow-up telephone calls within the first 24 hours after a very early discharge of between 3 and 24 hours. (Benrubi et al., 1983; Mehl et al., 1976).

According to the literature, the earlier the discharge time, the sooner the newborn should be seen by a pediatric health care provider. Some researchers cited protocols required infant office exams at 2 or 3 days following birth (Benrubi et al., 1983; Britton & Britton, 1984; Committee on Fetus and Newborn/American Academy of Pediatrics, 1980), while other standards required infant office follow-up at a minimum of 7 days (Goodlin, 1980; Mehl et al., 1976). Although most studies required mothers to have a 6-week postpartum examination, Lubic (1976) thought a 4-week postpartum examination was a safer policy and better met women's postpartum needs.

All the home visiting programs described in the literature were staffed by RNs with additional education that ranged from visiting nurses employed by hospitals, to nurse practitioners and certified nurse midwives.

According to Regan (1984), the ideal follow-up

nursing program should begin with an antepartal home visit during the 7th month of pregnancy. The visit should be made by the same RN who will follow the mother postpartally. The goals of the visit should be to identify problems at an early time, to prevent complications and to improve maternal knowledge, skills and confidence. Regan also studied maternal attitudes regarding the helpfulness of home visits. Of those who responded, 27% considered home follow-up visits to be essential, 50% thought they were very helpful and 13% could have managed alone. Ninety-four percent of the women stated they would recommend the program to others.

Jansson (1985) commented that the first priority of home visits should be directed toward the concerns of mothers or significant others. In so doing, parents would not need to focus on unanswered worries or fears that could interfere with further learning and involvement during the remaining visit. The author recommended that visiting time should not exceed 1 hour, the nurse should deal with the less urgent needs during future visits and care should be taken not to overload parents with too much teaching at one time. Jansson suggested performing the mother's assessment first, so that she may be free to assist with and comfortably observe the newborn's examination.

Examination criteria varied from study to study.

Generally, the mother's exam consisted of an assessment of vital signs, breasts, fundus, bladder, episiotomy or laceration sites (this should be palpated and observed if there is unusual pain), vaginal discharge, legs and Homan's sign (Avery et al., 1982; Lemmer, 1985; Mehl et al., 1976; Regan, 1984).

Several authors recommended that the newborn exam consist of vital sign measurements and assessments of the sclera, mouth, heart and lungs, umbilical cord and skin. If there is evidence of jaundice, it was suggested that a blood sample for bilirubin be taken (Avery et al., 1982; Jansson, 1985; Lemmer, 1985). In addition, Jansson suggested that the nurse include an assessment of the fontanels, clavicles, spinal cord, femoral pulses, hips, extremities, muscle tone and reflexes. Jansson stressed the importance of using the assessment as a learning tool by performing the exam in the mother's presence. Mehl et al. (1976) emphasized an assessment of the newborn's general appearance with special attention given to jitteriness and lethargy.

Normal Maternal Changes During the Puerperium

Essential to the provision of good postpartum nursing care is an awareness of the rapid maternal changes that take place after childbirth. Although the puerperium covers the 6-week period following delivery, the most

dramatic changes occur during the first week. An adequate understanding of involution (the retrogressive changes that affect the genital tract) is invaluable in detecting early deviations from the normal process.

Due to the evacuation of the uterus and the normal 300 to 500 ml blood loss following the birthing process, there is an initial weight loss of about 12 lb after delivery and an additional 5 lb loss of fluid by the end of the first postpartum week (Pritchard, MacDonald & Gant, 1985). This rapid mobilization of body fluids causes a profound diuresis and diaphoresis during the first 3 days of the puerperium (Ziegel & Cranley, 1984). The blood volume decreases from 5 to 6 liters to 4 liters by the 3rd postpartum week (Benson, 1984).

The white blood cell count (WBC), which increases to 20,000 to 30,000/mm during labor, returns to normal within 1 week. During the first week following childbirth, the increased level of coagulation factors of pregnancy continue to persist. As a result, susceptible women are at an increased risk for the development of thrombophlebitis (Ziegel & Cranley, 1984).

Uterine involution consists of the processes of autolysis (self-digestion) and atrophy (decrease in cell size). By the 7th postpartum day, the fundus (the top of the uterus) is normally palpable at the level of the symphysis pubis and by 6 to 8 weeks, it resumes its

prepregnant size, position and weight of about 2 ounces (Ziegel & Cranley, 1984). Protein from the uterine walls breaks down into simpler compounds that are excreted in the urine. The nitrogen content in the urine increases for several days. Following the separation of the fetal membranes and placenta, the remaining decidual layer becomes differentiated into two layers and within 2 to 3 days, the outer layer is cast off in uterine discharge (lochia). The inner layer that contains uterine glands and connective tissue remains for endometrial regeneration. This process of endometrial regeneration takes 3 weeks with the exception of the placental implantation area which takes a full 6 weeks for complete regeneration (Ziegel & Cranley, 1984). Intense uterine contractions, known as afterpains, often occur in multiparas during the early puerperium (Easterling & Herbert, 1982).

The progress of involution is also assessed by the quantity, character and odor of the lochia, which totals 150 to 400 ml (Ziegel & Cranley, 1984). For the first few days after childbirth, lochia rubra, the blood-tinged uterine/vaginal discharge is passed in fairly large quantities. The vaginal discharge is called lochia serosa when it becomes more pale and serous. By the second postpartum week, it changes to what is known as lochia alba, which is thicker and yellow-white in color. By week 4, lochial discharge generally ceases as healing is nearly

complete and the characteristic odor is similar to menstrual blood (Noyes, 1984).

The lateral margins of the cervix may lacerate during delivery, often resulting in the typical "fish mouth appearance of the parous cervix" (Easterling & Herbert, 1982, p. 788). The cervical os constricts rapidly. By the 4th to 6th postpartum day, two fingers are readily admitted, but by the end of the second week, the cervical os will have less than a 1 cm opening. The vagina becomes a capacitant smooth-walled passage following delivery, but regains its characteristic rugae by the third week, but rarely returns to prepregnant dimensions (Easterling & Herbert, 1982; Pritchard et al., 1985).

Urethral and bladder trauma are associated with infant passage through the maternal pelvis and birth canal. This causes dilatation of the renal pelvis and ureters and trauma to the bladder. Women are very susceptible to urinary tract infections during the puerperium, as they are during pregnancy. These structures normalize by the end of the postpartum period (Easterling & Herbert, 1982).

The abdomen of postpartum women tends to be soft and flabby. For some women, extreme abdominal stretching causes the rectus abdominis muscles to separate, leading to a condition known as diastasis recti. This condition is dependent on the number of pregnancies a woman has had,

the woman's physical condition and the nature and frequency of physical exercise. Complete restoration of muscle tone generally takes between 2 and 3 months (Ziegel & Cranley, 1984).

Following a difficult birth, there may be bruises and hematomas affecting the perineum. Episiotomy sutures may involve either the medial or mediolateral perineal area. Extensive perineal repair may be required when lacerations occur that extend into the anal area. Hemorrhoidal and perineal varicosities usually reduce spontaneously after delivery (McCarty, 1980).

Constipation may occur during the first few days after childbirth, secondary to soreness and decreased mobility of the gastrointestinal tract, particularly after excess analgesia or anesthesia or subsequent to a large perineal laceration (Easterling & Herbert, 1982).

The lactogenic hormone, prolactin is produced and released from the anterior pituitary gland almost immediately following delivery due to the inhibition of prolactin inhibitory factor (Ziegel & Cranley, 1984). From the second to the fifth days after delivery, colostrum can be secreted by the breasts (Pritchard et al., 1985). The breasts may become uncomfortable due to engorgement which may persist for 36 to 48 hours (Ziegel & Cranley, 1984).

A woman's temperature may rise to 38 degrees C (100.4 degrees F) after labor and usually returns to normal

within 24 hours postpartum. The pulse rate usually returns to normal within 7 to 10 days after childbirth (McCarty, 1980).

As the new mother assumes the responsibility of caring for her infant, she has a tendency to deny herself the rest she needs by overextending herself. Rubin (1967) described this as the "taking hold" phase that is often associated with rapid mood swings. Women are vulnerable to feeling overwhelmed and depressed at this stage of the childbearing cycle. Additionally, once the excitement of labor and delivery passes, the characteristic sudden shift of hormones occurs, physical discomforts exist and fatigue presents itself. As a consequence to all the physical and emotional dynamics taking place simultaneously, the woman may feel even more let-down and depressed. It is felt that up to 80% of new mothers develop symptoms of depression between the 2nd and 10th postpartum days, a phenomena commonly referred to as "postpartum blues" (Yalom, Lunde & Moss, 1968). Although considered to be short-term and secondary to environmental and social stressors, the symptoms of crying, anxiety, emotional instability, inability to concentrate or think clearly, fatigue and malaise have a definite impact on the new mother's ability to function (Affonso & Domino, 1984).

Neonatal Transition Following Birth

By the end of the first day of life, the normal term neonate will have made significant extrauterine adjustments, particularly in the respiratory and cardiovascular systems. Shortly after birth, the breathing pattern changes from the shallow and episodic patterns that are characteristic of the fetus, to the deeper and more regular inspirations of the newborn. By breathing deeper and more regularly, bronchial and alveolar fluid in the lungs is rapidly replaced by oxygenated air. The fluid exits through the pulmonary circulation and lymphatics (Pritchard et al., 1985).

With air replacing fluid, the pulmonary vascular compression and resistance to pulmonary blood flow decrease dramatically. This decreases pulmonary arterial blood pressure and enables the fetal ductus arteriosus to close. Closure of the foramen ovale is not as essential to extrauterine survival and the timing of this event is variable, usually occurring within the first hours or days of life (Pritchard et al., 1985). However, even with early closures, there may continue to be some shunting of blood around both structures during the first few days of life (Ziegel & Cranley, 1984).

By 1 hour of life, the respiratory rate usually falls to between 40 and 60 breaths per minute. Respiratory movements are diaphragmatic with visible movement of the ab-

dominal muscles. The normal heart rate falls to within a range of 120 to 180 beats per minute (Avery & Taeusch, 1984). A systolic blood pressure less than 51 to 55 in healthy full-term infants is considered hypotensive. Instability of the heat conservation mechanism may cause the newborn's temperature to drop very quickly if not adequately protected from evaporation, conduction, convection and radiation. However, the newborn is capable of increasing heat production by shivering, metabolizing brown fat stores of the interscapular, axilla and posterior neck triangle regions and increasing general metabolism (Ziegel & Cranley, 1984).

The average birthweight (BW) for term Caucasian infants is 3400 gms (7 lb 8 oz), but 50% of these babies have weights that vary between 2950 gms (6 lb 8 oz) and 3515 gms (7 lb 12 oz). Birthweights of non-Caucasian newborns are usually less than those presented. After 38 weeks gestation, male infants generally weigh about 200 gms (7 oz) more than females (Ziegel & Cranley, 1984).

It is typical for the 5 to 15% physiologic weight loss that occurs during the first few days of life to become stationary by the third or fourth day and to increase thereafter. Birthweight is usually regained by 10 to 12 days of age, although some infants regain their birthweight by 7 days of life (Ziegel & Cranley, 1984). After this time, the weight gain averages about 25 gms per

day for the first few months. The normal length of female newborns tends to be less than males, with term girls averaging 19.7 inches (50 cms) and boys averaging 20.5 inches (52 cms) (Pritchard et al., 1985).

The normal newborn's skin color is pink. Exposure may lead to extremity mottling. Jaundice that occurs before the first 24 hours is abnormal (Avery & Taeusch, 1984). Nearly every newborn develops at least mild jaundice,

> because, a large red cell mass is present at birth, the hepatic glucuronide conjugation system is not mature and bilirubin that is present in meconium may be reabsorbed after it is unconjugated by beta glucuronide (Sills & Coen, 1984, p. 1097).

During fetal life, bilirubin is metabolized in the unconjugated form in order to cross the placenta. It is felt that gestational age and the extent of the infant's ability to adapt to the adult pattern influences the extent of newborn jaundice. Among other extrauterine adjustments, following birth the infant must convert to the adult pattern of metabolizing conjugated bilirubin through the liver. So called physiologic jaundice is said to have occurred when the total bilirubin level is less than 12 to 12.5 mg/100 ml and the yellow skin coloring dissipates by the end of 7 days of life (Ziegel & Cranley, 1984). In term newborns, phototherapy is given only after the total serum bilirubin level rises to greater than 15 mg/100 ml and is currently considered the method of choice

for reducing elevated bilirubin levels (Sills & Coen, 1984).

The type of labor largely determines the infant's appearance during the first few weeks of life. Long labors produce elongated and pointed heads. Even after short labors, there may be swelling, puffiness, head bruises and forceps marks. Fortunately, these are temporary and rarely require treatment (James & Adamsons, 1982). Molding of the infant's head normally occurs as the consequence of descent through the birth canal and may distort fontanels and sutures. The two most common head abnormalities are caput succedaneum and cephalhematoma. Edema of the scalp skin that crosses suture lines describes the former and subperiosteal bleeding that does not cross suture lines is the definition for the latter (Avery & Taeusch, 1984). The chest circumference is normally 2 cms less than the head circumference and this pattern persists for a few months (Ziegel & Cranley, 1984).

Most newborns are at risk for the development of anemias during the first few months of postnatal life. The normal newborn hemoglobin is high and measures between 14 to 19 gm/100 ml of blood; the hematocrit ranges between 48 to 60%. The extra blood is a carry-over from fetal life and, during that time, was necessary for adequate oxygenation in utero. After the first week, these levels gradually drop. Erythropoiesis is either very slow or

ceases entirely for the first 6 to 8 weeks of life. As their lifespan ends, there is a breakdown of red blood cells. The rapid growth during early infancy creates an expanded circulatory system. By 3 months of age, physiologic anemia often occurs (Ziegel & Cranley, 1984).

The maturity of the gastrointestinal system, reflected in patterns of eating and stooling, varies greatly among newborns. The initial meconium stool changes to transitional stools that are thinner and yellow-green in color. These transitional stools are a combination of meconium and milk and generally occur between the second and fourth days of life. After day 4 or 5, the stools are dependent on the type of nutrition taken in by the newborn. Breastfed babies expel stools that are yellow, semiformed and curdy, later becoming golden-yellow and pasty with a characteristic sour odor. Formula-fed infants pass stools that are drier, better formed and more pale-yellow in color, with a much stronger odor. The number of stools varies, from one each day to one after every feeding, with breastfed babies tending to have more frequent bowel movements (Ziegel & Cranley, 1984).

Primitive reflexes present at birth illustrate an immature central nervous system. Rooting, sucking, grasping and gagging are easily observed, while the moro reflex is easily elicited. Jerky, uncoordinated movements

are generally normal in newborns. Senses such as hearing and vision are well developed. The neonate does not produce tears with crying and although the eyes may appear to be dysconjugate, they can follow moving objects well. A newborn usually sleeps the majority of a 24-hour period, but this is subject to considerable individualization (McCarty, 1980).

After the umbilical cord is cut and clamped at birth, the Wharton's jelly that covers the umbilical vessels in utero dries rapidly once exposed to the air. Most newborns who are discharged early are sent home with an i-cord clamp in place. By the 6th to 10th day of life, the cord usually has atrophied to a black string that sloughs over the next few days. The remaining small denuded area heals completely within another week. The formation of thrombi seals off the three blood vessels that form the base of the umbilical cord. Final obliteration normally does not occur until the end of the neonatal period. At this time, the thrombi organize and the umbilical vessels are reduced to fibrous cords. Until the process of healing is completed, the umbilical vessels are possible portals of entry for pathogens (McCarty, 1980; Ziegel & Cranley, 1984).

Conceptual Framework

In providing follow-up assessments of postpartum women and infants, it is essential that the practitioner

possess a body of knowledge, evolved from scientific inquiry, that serves as the basis for nursing practice (Dickson & Lee-Villasenor, 1982). This body of knowledge is the central unifying concept described as "an idea representing a view of man and/or nursing" (Ellis, Padurich & Palmer, 1979, p. 127). To better integrate and pull together the central unifying concept, supporting concepts or threads are also needed (Ellis et al., 1979).

The self-care theory for nursing, first developed by Dorothea Orem in 1958 (Orem, 1980), is embedded in the current American trend of sending new mothers and their newborn infants home early after delivery. Kinlein (1977) proposed an adaptation of Orem's framework to a health care delivery system that is client-oriented and focuses on increasing one's ability to continue maintaining or improving health through collaboration and cooperation with the primary nurse. The nature of the self-care process is holistic and health oriented. It focuses on three levels of disease prevention: primary (disease prevention and health promotion), secondary (health-directed self-care) and tertiary (rehabilitation). When a person undergoes a major transition (childbirth) or becomes ill, the ability to care for oneself is diminished. When this occurs, it is the practitioner's role to compensate for it (Orem, 1980; Woolery, 1983).

Self-care is defined as activities initiated and

performed on a person's own behalf for the purpose of maintaining life, well-being and health (Kinlein, 1977). A central concept of the framework is that "self-care and care for dependent family members are deliberate actions sequentially performed to meet known needs of care" (Orem, 1980, p. 28). Self-care assets (abilities) are assessed in addition to deficits (the person's disability or the inadequate environment that limits one's abilities to accomplish self-care). A major emphasis of the framework involves client participation in determining desired goals. "The goal in nursing, like the goal in all other health services, is to achieve health results for individuals or groups, sick or well, when they need help" (Orem, 1980, p. 117). If persons are not motivated to be responsible for their own health needs, this may be among nursing's functions, when appropriate. Therapeutic self-care demands consist of actions that, when taken, support life and formal functioning; maintain growth, development and maturation; prevent, control and/or cure disease; and prevent or compensate for disability (Orem, 1980).

Once the level of motivation and self-care assets and deficits are determined through nursing assessment, the need for nursing intervention is determined. Intervention consists of one of Orem's defined classes of nursing systems: (a) wholly compensatory (the person cannot or should not perform self-care actions); (b) partially

compensatory (the person can and should perform some but not all self-care actions) and (c) supportive-educative (the person can or should perform all self-care actions, following appropriate nursing guidance and instruction) (Orem, 1980).

After childbirth, parents set their own goals that include maintenance of a healthy mother and infant and promotion of nurturing family relationships (Wollery, 1983). Following an early discharge, parents assume the roles of self-care agents for themselves and their children. Using Orem's framework as a basis, it can be assumed that the more teaching parents receive regarding the therapeutic self-care demands of pregnancy, as well as the postpartum and postnatal periods, the more probable will be the attainment of their goals. The postpartum family's focus is on primary and secondary levels of disease prevention, in collaboration with nursing (Orem, 1980).

The final step of the self-care nursing process is the action phase that involves direct nursing care. The results of care are evaluated and decisions are made regarding continuation of care or necessary revisions of the care plan (Orem, 1980; Wollery, 1983).

Kobasa's hardiness construct (1979) will serve as supporting threads for integrating the self-care framework into postpartum assessments of women and newborns. The

relationship of stress to illness occurs in the following sequence: "social stressors, mediating factors, stress and the onset of illness" (Rabkin & Struening, 1976, p. 1014). Although the birth of a child is a normal physiologic process in a woman's life, it is also a social stressor. A social stressor, as described by Holmes and Rahe (1967), is the advent of a set of circumstances that require a change in an individual's present life pattern. Exposure to the stressor of childbirth, though not a cause of illness, may alter the mother's susceptibility to illness for a period of time. Mediating factors must also be considered in the mother's response to social stress. Mediating factors are characteristics of the stressful event (childbirth and the postpartum period), the woman and the social support network that influences perceptions of, or sensitivity to, the stressors (Holmes & Rahe, 1967).

Stress in the postpartum setting is due to the woman's response to the following tasks she must accomplish: "physical restoration, learning to care for and meet the needs of a dependent infant, establishment of a relationship with the infant and alterations of lifestyle and relationships to accommodate a new family member" (Gruis, 1977, p. 182). The appearance of somatic complaints or symptoms of maladaptation mark the "onset of illness" (Rabkin & Struening, 1976, p. 1014).

Although the relationship of stress to illness is generally recognized to be accurate, research has consistently shown a low correlation between the two (Rabkin & Struening, 1976). It seems that there must be an explanation for why more postpartum women, particularly among those who are discharged early, do not develop symptoms of physical or emotional illness.

In 1979, Suzanne Kobasa, a psychologist, proposed the hardy personality construct as a resistance factor in stress-induced disease. She found the two aspects of coping--the cognitive appraisal of events and actions directed toward those events--are influenced by one's personality. She proposed that the hardy personality type encourages optimistic cognitive appraisal and decisive interaction with events perceived as stressful. In this manner, the hardy personality can see these events in a perspective whereby they are perceived as less of a threat. Such a person is capable of taking action to terminate the stressful state. This dual process of cognition and action possessed by the hardy personality is termed "transformational coping" (Kobasa, 1979, p. 3).

To facilitate measurement, Kobasa considered hardiness to consist of three components: (a) commitment (as opposed to alienation) captures the hardy person's curiosity about and sense of the meaning of life, (b) challenge (in contrast to threat) epitomizes a person's

expectations that change in life is the standard and positive development is stimulated in the process and (c) control (rather than powerlessness) summarizes a person's belief that it is he/she that influences life's events (Bigbee, 1985). Practitioners should be aware that these components involve complex interrelationships rather than separate personality characteristics.

In relation to the stress of early discharge following childbirth, the hardy postpartum woman will attempt to positively affect the outcome of early discharge (control) by initiating counseling or direct problem-solving with health care professionals, family or friends when problems arise. This type of woman will seek more information regarding self-care and infant care practices (commitment) through reading, taking courses, talking with significant supporters in her life and consulting with health care providers. Faced with the inevitability of a major life change, the new mother who possesses a hardy personality will evaluate the impact of the new family member on future life goals in a more positive manner (challenge) and will initiate the assistance she believes is needed to facilitate positive growth and adaptation for the future.

In light of Orem's (1980) self-care framework and Kobasa's (1979) hardiness construct, it can be assumed by nurse practitioners that women who choose early discharge, and therefore, exercise self-care at an earlier time,

possess hardier personalities than those who remain hospitalized for longer periods after childbirth.

Research Hypothesis and Questions

The research hypothesis and questions were developed from the purpose, problem statement and literature review. The research hypothesis for this investigation is:

1. There are no significant differences in health outcomes among low-risk postpartum women and their healthy term newborns following discharge within 24 hours, between 25 and 48 hours and more than 48 hours after normal delivery.

The research questions investigated were:

1. Is there a relationship among demographic characteristics, parity and the length of hospital stay?

2. What reasons does a woman have for selecting her length of hospital stay after normal delivery?

3. Are there differences in maternal-directed health care teaching and methods of postdischarge follow-up for each of the three groups of women studied?

Definition of Terms

The following are conceptual definitions of the terms used in this study for the purpose of better understanding the terminology found in the hypothesis and research questions.

Maternal and Newborn Health Outcomes

In this study, maternal and newborn health outcomes are defined as the level of physiologic and psychologic wellness, based on health assessments performed at 1 week and 6 weeks postpartum.

Low-Risk Postpartum Women

Low-risk postpartum women refers to those women who, based on the hospital's and researcher's criteria, are eligible for both an early discharge and participation in this study. The women must have normal pregnancies and labors, uncomplicated vaginal deliveries and normal early postpartum courses.

Healthy Term Newborn Infant

To be considered a healthy term newborn, the infant must be examined in the hospital by a medical provider and found to be normal and healthy, have a birthweight between 2500 and 4500 gms (5 lb 8 oz and 9 lb 15 oz), a gestational age between 37 and 42 weeks and the newborn must meet the hospital's eligibility criteria for early discharge.

Parity

Parity refers to

> the number of pregnancies that terminated in the birth of a fetus or fetuses that reached the point of viability. This point is still considered to be 28 weeks gestation or 1000 grams (Varney, 1980, p. 64).

Length of Hospital Stay

For purposes of this study, women and infants are designated into one of the following groups, based on length of postpartum hospital stay: (a) those who remain up to 24 hours, (b) those who remain between 25 and 48 hours and (c) those who remain longer than 48 hours.

Demographic Characteristics

Demographic characteristics are defined as the age, educational level, socioeconomic status and religious affiliation of study participants.

Motivation of a Woman's Choice

Motivation of a woman's choice refers to the needs or desires of a woman that cause her to select a preferred length of hospital stay following normal vaginal delivery.

Hospital Discharge Criteria

Hospital discharge criteria is defined as the set of hospital standards that designate women and infants who are eligible for an early postpartum discharge.

Maternal-Directed Health Care Teaching

In this study, maternal-directed infant care teaching is defined as the quantity and quality of postpartum inpatient and outpatient instruction presented to the new mother by the hospital nursing staff and home visiting nurses regarding postpartum self-care and infant care

principles and practices.

Methods of Postdischarge Follow-up

Methods of postdischarge follow-up refers to the nature, quantity and quality of home nursing care for new mothers and their newborn infants.

Assumptions and Limitations

Several assumptions were made before this study was undertaken regarding the childbearing process and the postpartum and perinatal periods. They are listed as follows:

1. Although childbirth is considered a normal physiologic process, it is also a stressful and vulnerable period that encompasses the potential for both crisis and growth.

2. The hospital is strictly adherent to early discharge criteria for mothers and their infants.

3. A successful puerperium and perinatal health outcome following early discharge is linked to high maternal levels of hardiness (high degrees of commitment, control and challenge) and positive family approaches to self-care within the home.

4. Although from the same population of low-risk postpartum women, there are essential differences in women who choose to be discharged in the earliest study group (in 24 hours or less) compared to the control group

(longer than 48 hours).

Important limitations of this study relate to the generalizability of these finding to other populations of postpartum women and their infants. Subjects for the study were chosen by convenience sampling with the designation of small sample groups taken from only one hospital in the Salt Lake Valley.

Significance of and Rationale for the Study

As noted in the introduction and problem statement, in the United States there is an increasing trend toward very early discharge of postpartum women and their newborn infants. There has been no documented research on maternal-infant outcome comparisons based on the time of discharge that involves two early discharge groups (one group discharged within 24 hours and a second group discharged between 25 and 48 hours) with a control group consisting of women who choose to remain hospitalized for the traditional stay of more than 48 hours. With discharges occurring as early as 2 to 4 hours postpartum and women taking more responsibility for selecting their length of hospital stay, there is a real need for such studies.

The results of this study will assist many levels of health care providers to anticipate problems and concerns for mothers and infants who elect to leave hospitals

early. Primary care physicians, nurse practitioners, midwives, obstetricians and perinatal educators will be better able to initiate appropriate teaching and counselling before the onset of problems.

Maternal-directed infant care teaching and discharge planning to meet parturient needs can be better executed when there are known outcomes peculiar to the population of women who choose early discharge after childbirth.

Lemmer (1985) stated the impact of early discharge research on nursing administration: "knowledge of outcomes of early discharge can contribute to informed decision-making" (p. 26).

With such awareness of maternal-infant outcomes of early discharge, nursing administration can plan for improved and cost-effective allocation of nursing staff, teaching programs, take-home brochures, eligibility criteria and more effective discharge planning programs.

By assessing factors that motivate women to choose an early discharge program, there exists the potential to influence the entire maternal-child population. The literature review described the powerful effect of consumer demand on changing hospital programs to better meet the needs of the childbearing family. The literature frequently refers to the current family-centered maternity programs as "trends," which implies the dynamic nature of consumer attitudes and beliefs. It should be noted that

the family-centered maternity programs presently in existence are, in part, the result of health professional's fear of worsened maternal-infant health outcomes subsequent to the home birth "trend" of the 1970s. This provides strong impetus for more frequent repetition of surveys that reflect consumer motivation and demand. Such survey results would be invaluable to professionals who wish to follow changes in U.S. childbearing trends more closely.

By studying two groups of postpartum mothers and their infants who choose an early discharge compared to a control group from a similar population, scientific knowledge will be generated that will assist health care providers to determine the most optimal times for postpartum discharge.

Finally, research in this area will facilitate parents to feel more confident about leaving hospitals early after giving birth. Confidence during the early puerperium will certainly assure more successful adaptation, nurturing and bonding within the postpartum family.

CHAPTER II

RESEARCH DESIGN AND METHODS

Design of Study

The design selected for this study was the static-group comparison design. In this design, "a group which has experienced X is compared with one which has not, for the purpose of establishing the effect of X" (Campbell & Stanley, 1963, p. 12). In this study, however, there were three groups consisting of an early, middle and late discharge group. The late discharge group served as the control group for the study. Observations were made on one occasion for the three groups. The design is diagrammed in Figure 1.

The static-group comparison design lacks the strength of true experimental and quasi-experimental designs, due to threats to internal validity which consist of mortality, history, selection, maturation, interactions of selection bias and the experimental treatment and interaction of selection biases and maturation. A descriptive design was chosen because it is not possible to control for X--the subject's self-selection of discharge time. To mediate the effects of threats to internal validity, selection of the subjects for each of the three groups was

X O

X O

O

which was represented in this study as

Day 1	Days 12-16
early discharge	postdischarge measures of group 1 discharged early
Day 2	**Days 12-16**
early discharge	postdischarge measures of group 2 discharged early
	Days 12-16
	postdischarge measures of group 3 choosing later discharge

Figure 1. Static-group comparison design.

based on the discharge criteria listed in Table 1 and the same interviewer recorded data for all the subjects using the same format and method of interviewing.

This design controlled for instrumentation, testing and statistical regression. It should also be noted that the interaction of selection and X is a threat to external validity when the static-group comparison design is used (Campbell & Stanley, 1963).

Purposive or judgment sampling was used in this study. "In this type of sampling, individuals are selected who are considered to be most representative of the population as a whole" (Levy & Lemeshow, 1980, p. 16). The disadvantage of this type of sampling design is the lack of mathematical insight that can be obtained by the researcher concerning the reliability of the findings.

Population, Sample and Setting

The sample used in the study was taken from the population of low-risk postpartum women and their healthy term newborn infants who delivered at St. Mark's Hospital in Salt Lake City. Sample members consisted of one group of 19 mother-infant dyads who self-selected early discharge and one group of 20 mothers and their infants who self-selected a middle discharge time. Group 1 included mothers and infants discharged within 24 hours after delivery and group 2 included those discharged between 25 and 48 hours following childbirth. Group 3 was the

Table 1

Criteria for Participation in Study

Postpartum Women	Infants
Normal pregnancy and labor	37-42 weeks gestation
At least 20 years of age	2500 to 4500 gms (5 lb 8 oz to 9 lb 15 oz)
Vaginal delivery	
Temperature < 38° C	Documented normal physical exam
No postpartal hemorrhage	Respiratory rate < 60
No history of hypertension or insulin-dependent diabetes	Temperature stability
	Heart rate < 60
Blood pressure < 140/90	Demonstrated feeding ability (can suck and swallow)
Prepregnant weight < 230 lbs.	

control group and consisted of 20 mothers and their infants who chose to remain hospitalized longer than 48 hours.

Procedure

Study participants were approached during their hospital stay for an introduction to the research study. Each woman was given an explanation of the research purpose and methods. An opportunity for questions was given, followed by a statement of informed consent which was signed by the participants before the study was begun (Appendix B). Each postpartum woman and infant was visited in the home by the investigator between 12 and 16 days following delivery. During the visit, an interview was conducted to determine the mother's and infant's current health status. At this time, a questionnaire was also completed by each woman. Upon completion of the interview and questionnaire, an opportunity was given for the mother to ask questions and discuss concerns.

Operational Definitions and Instrumentation

For the purpose of testing the research questions and hypothesis for the static-group comparison design, specific methods and instruments were employed. The established discharge criteria listed in Table 1 were met by all mothers and newborns for selection and participation in the study. Purposive sampling was used for

selection of participants.

To test the research hypothesis:

> There are no significant differences in health outcomes among low-risk postpartum women and their healthy term newborns following hospital discharge within 24 hours, 25 to 48 hours and more than 48 hours,

a health status interview was conducted on mothers and infants between the 12th to 16th postpartum day. A tool developed by Lemmer (1985), based on standard postpartal and postnatal assessment formats, was used in this study. The maternal and infant physical assessment forms may be reviewed in Appendix A. Responses were recorded as "normal" or "abnormal," and the frequencies were counted for the appropriate items.

To facilitate measurement of the first and second research questions:

> Is there a relationship among women's demographic characteristics, parity and the length of hospital stay after normal delivery?
>
> and
>
> What reasons does a woman have for selecting her length of hospital stay after normal delivery?

the childbirth experience questionnaire initially developed by Lemmer (1985), but adapted and retitled by this investigator, was employed. Upon Lemmer's recommendations, minor revisions in the original tool were made to encourage more subjective recordings of women's reasons for choosing their length of hospital stay. The questionnaire identified demographic variables and situational

information that may have influenced the woman's decision for early hospital discharge. The information obtained from this questionnaire helped to determine the relationship of demographics and parity to the timing of discharge (Appendix A).

Finally, to investigate the third research question:

> Are there differences in maternal-directed health care teaching and methods of follow-up for each of the three groups of women?

two methods were used to obtain information. The head nurses of the labor and delivery, postpartum and newborn nursery units were consulted at the onset of the study to determine the content and differences in maternal-directed infant care teaching for the three groups, as well as the nature and differences in follow-up for each of the three groups. The second method for obtaining information was through use of the childbirth experience questionnaire to determine the manner in which patient education standards were modified to meet individual needs.

CHAPTER III

FINDINGS AND DISCUSSION

Methods of Analysis

The data collected for this study were analyzed using the Statistical Package for the Social Sciences (Nie, Hull, Jenkins, Steinbrenner & Bent, 1975). With respect to the demographic data, descriptive statistics were generated. The independent *t*-test and chi-square were the statistics used to analyze differences between groups. The independent *t*-test is a parametric procedure for testing differences in group means among two or more groups in which the scores in a sample have no relationship to those in another sample. In using the *t*-statistic, data must be at least interval level. The value of the *t*-statistic is compared to a tabled value that establishes an upper limit to what is probable if the null hypothesis were true. When the calculated *t*-value is greater than the tabled critical value, a significant difference can possibly exist between the group means and the null hypothesis can be rejected (Polit & Hungler, 1983).

Chi-square is a nonparametric test and is computed by comparing two sets of nominal level frequencies: "those observed in the collected data and those expected if there

were no relationship between two variables" (Polit & Hungler, 1983, p. 52). This nonparametric test determines whether a systematic relationship exists between two variables. When used alone, chi-square determines whether variables are independent or related without information as to the strength of the relationship (Nie et al., 1975).

Responses to open-ended questions were compiled by the investigator. They were categorized on the basis of conceptualized information contained in the responses. Frequency counts were made and the percentages of the samples were computed as related to the research questions.

Description of Subjects

Eight hundred and nine births occurred during the 5 1/2 months that data were collected at the hospital where the study took place. Six hundred and nine of these women had vaginal deliveries. Approximately 21.5% of the total number of women who delivered and 28.5% of those who delivered vaginally, self-selected an early hospital discharge.

Among the women choosing hospital discharge within 24 hours of delivery, 19 consented to participate in the study. These women and their infants were designated as group 1. Twenty women who met study criteria and left the hospital between 25 and 48 hours postpartum agreed to

participate and were considered to be group 2. The control group was comprised of 20 postpartum women and their infants who selected a discharge time of more than 48 hours after delivery. The control group was designated as group 3.

The length of hospital stay for mothers and infants in group 1 ranged from 12 to 24 hours, with 10 women (52%) leaving the hospital at 24 hours. The average time of hospital discharge for this group was 20.6 hours. The average length of stay was 41.2 hours for those in group 2 with 35% of the women and infants leaving at 48 hours. The time of discharge for group 3 tended to show the most variability, ranging from 49 to 76 hours, with a mean of 59.4 hours.

Table 2 summarizes the sample demographic characteristics of the 59 study participants. All but 2 subjects were married and 57 out of 59 women were Caucasian. The average age was 26.6 years and the mean number of years of education was 13.3. Of the 59 women interviewed, 77.5% reported annual incomes of $20,000 or greater. Median annual income for all groups was between $25,000 to $29,999. Fifty-six percent of the subjects practiced the Latter Day Saint (LDS) faith, approximately 14% were Roman Catholic and 22% had no religious preference. Twelve subjects (20.7%) were primiparas and the remaining 47 women (79.3%) had two or more children. The

Table 2

Sample Characteristics

Characteristic	N	%
Marital Status		
Married	57	96.6
Separated	1	1.7
Never Married	1	1.7
Religious Preference		
LDS	33	55.9
Roman Catholic	8	13.6
Protestant	3	5.1
Other	2	3.4
None	13	22.0
Number of Viable Pregnancies		
1	12	20.7
2	16	27.6
3	20	34.5
4	6	10.3
5+	4	6.4
(Mean = 2.6, SD = 1.3, Range 1-7).		
Age		
20-24	23	39.0
25-29	19	32.2
30-34	13	22.0
35+	4	6.8
(Mean = 26.6, SD = 4.3, Range 20-36)		
Education (highest year completed)		
Some high school (9-11)	7	11.9
High school graduate (12)	18	30.5
Some college or trade (13-15)	25	42.3
College graduate (16)	4	6.8
Postcollege (17+)	5	8.5
(Mean = 13.3, SD = 1.9, Range 9-17)		

Table 2 continued

Characteristic	N	%
Annual Income		
< $15,000	6	10.3
15,000-19,999	7	12.1
20,000-24,999	11	19.0
25,000-29,999	7	12.1
30,000+	27	46.5
(Median Category = $25,000-29,999)		

average number of viable pregnancies among the participants was 2.6 (Table 2).

Research Question One

Research question one stated:

> Is there a relationship among demographics, parity and the length of hospital stay?

Table 3 compares the demographic characteristics for each of the three groups of women. For each of the categories of age, education and the number of viable pregnancies, the mean, standard deviation and range were determined. It can be seen in Table 3 that the three groups are very homogeneous with respect to these characteristics. All groups had given birth to an average of between two and three children and had attended an average of at least 1 year of college. Women in the later discharge group tended to be the oldest and averaged 28 years of age, compared to 26.6 years of age in the earliest discharge group and 25.3 years of age in the middle discharge group. With regard to religious affiliation, 57.9% of the women in group 1 were of the LDS faith, compared to 45% in group 2 and 65% of the subjects in group 3. None of these findings were statistically significant. The only observed trend in the data was in the level of income, with 12 women (63.2%) in group 1 receiving an annual income of less than $30,000, compared to 10 women (52.6%) in group 2 and 9 women (45%) in group

Table 3

Selected Demographic Comparisons Between Discharge Groups

Characteristic	Early	Middle	Late
Number of Viable Pregnancies			
Mean	2.9	2.2	2.8
SD	1.2	1.2	1.4
Range	1-6	1-5	1-7
Age			
Mean	26.6	25.3	28.0
SD	4.3	4.1	4.1
Range	20-36	20-36	22-35
Education			
Mean	13.4	13.2	13.3
SD	1.8	1.9	2.0
Range	10-17	9-17	11-17
Income (< $30,000)			
n	12.0	10.0	9.0
Percent	63.2	52.6	45.0
Married			
n	19.0	19.0	19.0
Percent	100.0	95.0	95.0
LDS			
n	11.0	9.0	13.0
Percent	57.9	45.0	65.0

Note. No significant differences were observed. The independent t-test was not significant at the .05 level.

3. This trend showed the earliest discharge group to have a slightly lower income than the middle discharge group. The latest discharge group had the highest annual income, but these differences were not statistically significant.

There were more women in group 2 who were employed during their pregnancies than those in the other two groups. Sixteen women (80%) in the middle discharge group worked while pregnant. Seventy-five percent of these women were planning to return to work after the puerperium. Fifteen of the group 1 women (78.9%) were employed and 11 women (57.9%) were anticipating a return to employment. Although not statistically significant, slightly fewer group 3 women (70%) were employed while pregnant and even fewer (50%) planned on working after the postpartum period. From the study findings there does not appear to be a significant relationship among demographics, parity and the length of hospital stay.

Hypothesis

The hypothesis in this investigation stated:

> There are no significant differences in health outcomes among low-risk postpartum women and their healthy term newborns following hospital discharge within 24 hours, between 25 and 48 hours and more than 48 hours after normal delivery.

Health Outcomes

At 12 to 16 days postpartum, each woman in the study was interviewed to determine whether problems had occurred

since hospital discharge. The findings will be reported in two sections -- those pertaining to the mothers followed by those pertaining to the newborn infants.

Mothers. Maternal health outcomes were assessed by the Maternal Physical Assessment Interview form (Appendix A). The areas assessed included the following: fatigue, depression, fever/chills, breast soreness, nipple tenderness, breast engorgement, lochia, episiotomy discomfort, bladder problems, hemorrhoids, leg swelling, other reported problems and the need to contact the woman's health care provider following hospital discharge. With the exception of 3 women in group 1 and 3 women in group 2, all women received episiotomies.

Chi-square analysis of the number of women having complications in each group revealed a statistically significant increase in complaints of fatigue among the women in group 3 as compared to the group 1 women (X: .0138; $p < .05$). Seven women (35%) in group 3 complained of fatigue. There were no complaints of fatigue among study participants in group 1. With the exception of bladder symptoms, the mothers in group 1 reported a fewer or equal number of total problems than mothers in either groups 2 or 3. Three women (15.8%) in group 1 described symptoms of burning with urination. One woman (5%) in group 2 and 2 women (10%) in group 3 had similar complaints. One-way analysis of variance of the total numbers of postpartum

problems between groups 1 and 3 revealed a statistically significant F ratio of 3.88 ($p < .05$) for an increased number of reported problems in group 3 (Table 4).

There were a total of 13 problems among 9 women in group 1. Of these women, 4 had two problems. In group 2, 14 women had a total of 29 problems. Four women had two problems, 1 women had three problems, 1 woman had four problems and 1 woman had seven problems. Sixteen women in group 3 had a total of 38 problems, with 7 women having two problems, 1 woman having three problems, 3 women having four problems and 1 women having five problems. Of interest is the incidence of fever/chills among study participants. One woman (5.3%) in group 1, 2 women (10%) in group 2 and 4 women (20%) in group 3 had complaints of this nature during the early puerperium. Although there were no group 1 subjects who complained of breast soreness, 2 women (10%) in both groups 2 and 3 had this problem. The incidence of nipple tenderness was the greatest in group 2, with 7 women (35%) complaining of this problem, as compared to 5 women (25%) in group 3 and 2 women (10.5%) in group 1. Breast engorgement increased as women stayed longer in hospitals, with 1 woman from group 1 (5.3%), 2 women from group 2 (10%) and 3 women from group 3 (15%) with this problem. None of the group 1 women complained of hemorrhoids, but 20% of the women in both groups 2 and 3 considered this to be problematic.

Table 4

Number of Postpartum Problems for Infant and Mother by Time of Discharge

Time of Discharge (After birth)	Origin of Problems					
	Infant			Mother		
	Mean	SD	Range	Mean	SD	Range
12-24 hrs	1.4	1.5	0-4	0.7	0.9	0-3
25-48 hrs	1.5	1.3	0-4	1.5	1.8	0-7
> 48 hrs	1.4	1.2	0-4	2.0	1.4	0-5
	F (2,56) = 0.03 ns[a]			F (2,56 = 3.88) $p < .05$[a]		

Note. [a] F-ratio based upon 1-way analysis of variance.

"Other problems" among the group 1 women consisted of 2 mothers with afterpains, 1 with back pain and 1 with severe constipation. Of the group 2 women, 1 complained of constipation, 1 complained of anemia, 1 complained of back pain and 1 complained of carpal tunnel syndrome. Among the group 3 women, 1 complained of a painful lump under her right arm, 1 woman stated she was anemic, 1 woman had hypertension and 1 woman complained of decreased milk production, tail bone numbness and constipation.

Each woman was asked to recall the total number of postpartum telephone calls made to the health care provider, the visiting nurse (if applicable) and the postpartum unit at the hospital for answers to questions, reassurance or assistance with medical problems (Table 5). Six women in group 1 made a total of seven telephone calls. Four calls were made to the health care provider, two were made to the visiting nurse and one call was placed to the postpartum unit at the hospital. Three of these women had problems that required visits to the doctor for medical treatment (Table 6). Among the group 2 mothers, 16 calls were made by 10 women. Five calls were made to the postpartum unit, 10 were made to the physician's office and 1 was made to the visiting nurse. Six women required medical treatment for their problems. A total of 12 calls were made by 10 women in group 3. Three calls were made to the hospital postpartum unit and 9 were

Table 5

Prevalence of Type of Problem Frequencies By Mothers in the Discharge Groups

Problem Areas	Discharge Groups					
	12-24 hrs		25-48 hrs		> 48 hrs	
	n	%	n	%	n	%
Fatigue	0	0.0	3	15.0	7	35.0
Depression	0	0.0	1	5.0	1	5.0
Fever/Chills	1	5.3	2	10.0	4	20.0
Breast Soreness	0	0.0	2	10.0	2	10.0
Nipple Tenderness	2	10.5	7	35.0	5	25.0
Breast Engorgement	1	5.3	2	10.0	3	15.0
Lochia	1	5.3	2	10.0	2	10.0
Episiotomy Discomfort	0	0.0	1	5.0	2	10.0
Bladder Problems	3	15.8	1	5.0	2	10.0
Hemorrhoids	0	0.0	4	20.0	4	20.0
Leg Swelling/ Pain	1	5.3	0	0.0	1	5.0
Other	4	21.0	4	20.0	6	30.0
Totals	13 (9 women)		29 (14 women)		38 (16 women)	

Note. Chi-square analysis of the number of women having complications in each group revealed a statistically significant increase in complaints of fatigue among women in group 3 compared with women in group 1. The obtained chi-square of .0138 was significant at $p < .05$.

Table 6

Postpartum Problems that Required Medical Intervention

	Group 1	Group 2	Group 3
Breast infection	0	1	3
Passage of blood clots	0	2[b]	1
Urinary tract infection	1[a]	0	0
Anemia	0	1	0
Thrombophlebitis	1	0	0
Hemorrhoids	0	0	1
Back pain, Rxn to epidural anesthesia	1	0	0
Inadequate milk supply requiring change in feeding	0	0	1
Back pain, insomnia, fly	0	1	0
Carpal tunnel syndrome	0	0	1
Blocked milk duct	0	0	1
Totals	3	6	8

Note. [a] Two other group 1 women complained of burning upon urination during the 2-week study interview and were referred to their physicians for urinary tract infections. [b] One woman also complained of flu-like symptoms.

made to the woman's health care provider. Eight of the 10 women who placed calls needed medical treatment. None of the group 1 women sought assistance for conditions related to breasts or breastfeeding, but two calls made by the women in group 2 and 8 calls by the group 3 women were of this nature.

Infants. Infant health outcomes were assessed by the Infant Physical Assessment Interview form (Appendix B). Each mother was interviewed in regard to her infant's health status. Areas assessed included the following: mode of feeding, tolerance of feeding, irritability, lethargy, voiding pattern, stooling pattern, mother's perception of jaundice, medical supervision of jaundice, treatment for jaundice, problems with the umbilical cord, circumcision problems, other problems and the need to contact the infant's health care provider for problems after discharge. Chi-square analysis revealed no significant differences between the groups in terms of proportions of infant problems (Table 4). In addition, statistical analysis of the F ratio, based on the analysis of variance was nonsignificant at $F = .03$. The mean number of postnatal problems was slightly higher among the infants in group 2, with a total of 29 problems, a mean of 1.5 problems per infant and a standard deviation of 1.3 (Table 7). This compares to 26 problems among the infants in group 1, a mean of 1.4 problems per infant and a

Table 7

Reasons Given for Contacting Woman's Health Care Provider, Visiting Nurse, or Hospital Postpartum Unit

(35 contacts involving 26 women)

	Group 1	Group 2	Group 3
Breast inflammation/ fever	0	1	7
Questions/breast pumping	0	1	0
Inadequate milk supply	0	0	1
Blood pressure check	0	0	1
Burning upon urination	1	0	0
Back pain	1	0	0
Afterpains	1	0	0
Questions about blood clots	0	2	1
Questions about medications/ activity	1	3	1
Flu symptoms	0	4	0
Swelling in right hand	0	1	0
Hemorrhoids	0	0	1
Constipation	1	0	0
Miscellaneous/no specific reason given	0	3	0
Pain in leg	2	0	0
Change in lochia	1	0	0
Fatigue	0	1	0
Totals	7	16	12

standard deviation of 1.5. There were 27 problems among the group 3 infants, a mean of 1.4 problems per infant and a standard deviation of 1.2. The majority of all infants in all three groups were completely breastfed, with a total of 14 infants in group 1 and 13 infants in groups 2 and 3. Two-thirds of all infants in the three groups were female.

There were no problems related to circumcision, lethargy, or voiding patterns in any group of infants (Table 8), although 2 mothers in group 1 contacted their pediatricians for concerns regarding the circumcision site (Table 9). Only 2 infants in group 3 (10%) had problems with breastfeeding, while 1 infant in group 1 and 1 in group 3 had problems related to bottle feeding. Two infants in groups 1 and 3 had problems related to feeding intolerance, compared to 1 infant in group 2 with this problem. Two early discharge infants developed constipation while only 1 infant in groups 2 and 3 had similar problems. It appears that, although not statistically significant, the earlier the discharge time, the greater the incidence of visible jaundice. Six early discharge mothers (31.6%) and 7 middle discharge mothers (35%) felt their infants were jaundiced following discharge, compared to only 3 infants (15%) in the later discharge group. Blood was drawn on 6 group 1 infants (31.6%), 7 group 2 infants (35%) and 4 group 3 infants (25%). Treatment for

Table 8

Infant Problems

Problem Areas	Discharge Groups 12-24 hrs n	%	25-48 hrs n	%	> 48 hrs n	%
Feeding						
Breast	0.0		0.0		2.0	10.0
Bottle	1.0	5.3	0.0		1.0	5.0
Tolerance of feeding	2.0	10.5	1.0	5.0	2.0	10.0
Irritability	1.0	5.3	3.0	15.0	2.0	10.0
Lethargy	0.0		0.0		0.0	
Voiding pattern (at least 5-6 gms/day)	0.0		0.0		0.0	
Stooling (1/d)	2.0	10.5	1.0	5.0	1.0	5.0
Jaundice (mother's perception)	6.0	31.6	7.0	35.0	3.0	15.0
Medical supervision	6.0	31.6	7.0	35.0	5.0	25.0
Treatment for jaundice	3.0	15.8	5.0	25.0	3.0	15.0
Problems with umbilical cord	0.0		3.0	15.0	1.0	5.0
Circumcision	0.0		0.0		0.0	
Other	4.0	21.1	2.0	10.0	7.0	35.0
Totals	26.0		29.0		27.0	

Note. Chi-square analysis was not significant at the .05 level.

Table 9

Reasons Given for Contacting Infant's Health Care Provider/Hospital Nursery Unit (75 contacts involving 36 infants)

	Group 1	Group 2	Group 3
Jaundice (blood draw)	13[a]	21[b]	7[c]
Early well-baby visit	2	0	0
Feeding questions	1	2	2
Cord problems	0	3	2
Circumcision question	2	0	0
Eye discharge	1	0	4
Choking/vomiting	1	0	4
Constipation	1	1	0
Diarrhea	0	0	1
Crying/colic	0	2	0
Cold symptoms	2	2	1
Ear infection	0	0	1
Questions about hiccoughs	0	1	0
Possible galact-osemia	1	0	0
Totals	24	32	19

Note. [a] Six infants had their blood drawn a total of 13 times. [b] Seven infants had their blood drawn a total of 20 times. [c] Four infants had their blood drawn 7 times.

jaundice was prescribed most frequently for the infants in group 2, making a total of 5 infants who required treatment. Two were treated at home with phototherapy, 2 were treated with sun and fluids and 1 mother was told to withhold breast milk for 72 hours as treatment. Three infants in group 1 were treated with increased fluids for their jaundiced conditions. One group 3 infant was treated for jaundice with home phototherapy and 2 infants in this group were treated with increased fluids. None of the infants in this study required hospitalization for any condition, including jaundice and all cases of jaundice responded favorably to the prescribed methods of treatment. Sixty-three percent of the infants discharged early were entirely breastfed, compared to 65% of infants in the other two groups.

Reasons for the increased incidence of clinically-apparent jaundice in the early and middle discharge groups of infants is not known. All infants were considered to be term, vaginally delivered and found to be healthy and normal on examination during their hospitalization. Many of the contributory etiologies were not assessed in this study. They include: length and trauma of labor, birth drama, use of drugs during pregnancy, the amount of formula, frequency of breastfeeding and whether infant fluid supplementation occurred. Approximately two-thirds of the infants in all groups were breastfed. This fact

may offer a potential explanation for the existence of jaundice in all groups. Initially recognized by Newman and Gross (1963), there has been much research on the contribution of breastfeeding to neonatal jaundice. It has been found that inhibition to bilirubin conjugation activity of milk is influenced by the dietary lipid content and caloric content of the mother's diet. Such inhibitory milks may contain either unusual triglycerides or high lipase activity. Breast milk may undergo rapid lipolysis after ingestion by the newborn. Although the exact mechanism is unknown, it is felt that released free, fatty acids increase the absorption of intestinal bilirubin (Odell, 1980).

The diagnosis of jaundice due to breastfeeding involves substitution or reduction of breast milk with formulas. Once this is accomplished, there should be a reduction in the serum bilirubin concentration within 48 hours. Once breastfeeding is resumed in these newborns, the bilirubin level is not likely to rise. However, the mechanism referred to as chemical hyperbilirubinemia is likely to persist for weeks (Odell, 1980). Occasionally, the milk can be assayed for its inhibitory activity. In using this method, the lipase content is quantified. Another method involves measurement of the rapidity with which breast milk becomes inhibitory to in vitro conjugation of bilirubin after the milk stands at room tempera-

ture. Phototherapy may be initiated in infants with persistent elevated bilirubin levels that exceed 15 mg/100 ml. Such therapy may achieve a more rapid decline in the serum bilirubin. This variety of prolonged hyperbilirubinemia is not associated with kernicterus, but it is unknown whether breastfeeding can contribute to more subtle forms of bilirubin encephalopathy (Odell, 1980).

Although hyperbilirubinemia associated with breastfeeding is a common condition, caution should be exercised in the diagnosis of this condition. Its existence may be coincidental with other conditions such as galactosemia, congenital hyperthyroidism, pyloric stenosis or infections which may be the true explanation of the icterus. One way to differentiate among etiologies is to observe the infant closely for normal weight gain and neurologic development and behavior. This does occur with breastfeeding jaundice, but does not occur with other conditions.

This investigator believes that a possible explanation exists for the increased incidence of clinically-apparent jaundice in the early and middle discharge groups. Infants in the hospital nursery were supplemented with glucose or sterile water as needed to prevent dehydration during the early hours and days of life. Those who went home early did not receive continued close observation by a professional staff. Once home, they may not have received adequate caloric or fluid supplementa-

tion, or the volume and caloric content of the colostrum may not have been sufficient to prevent weight loss and dehydration. The study by Lemmer (1985) revealed similar findings, with an increased incidence of jaundice among newborns who went home in less than 24 hours. Among jaundiced infants, the cause of the condition may have been "starvation with the associated lipolysis and elevation of nonsterified fatty acids in the infant's circulation" (Odell, 1980, p. 69). The elevation of nonsterified fatty acids in the newborn's circulation interferes with "hepatic uptake and conjugation of bilirubin" (Odell, 1980, p. 69). The delayed clearance of bilirubin that occurs during the fasting state in adults is the same mechanism that occurs in the newborn state of starvation. With this mechanism, the reduced enterohepatic circulation of bile salts in addition to the increased opportunity for the enterohepatic circulation of bilirubin lessens the bile flow. In these jaundiced newborns, the bilirubin levels resolve promptly when adequate caloric and fluid intake are provided (Odell, 1980).

There were no problems with the umbilical cord among the group 1 infants, compared to 3 infants in each of groups 2 and 3 with this problem. In regard to the "other" category, 2 infants in group 1 and 3 in group 3 had plugged tear ducts; 1 infant in group 1 had a cold, compared to two colds in group 2 and one cold in group 3;

1 infant in group 1 had a palpable hip click that was detected in the hospital and required no immediate intervention; 1 infant in group 3 had otitis media; 1 infant in group 3 had problems with diarrhea; and 1 group 3 infant had an eye infection and possible galactosemia. The latter condition would require further blood testing to definitively diagnose the condition.

In regard to the frequency of postnatal telephone calls, infant visits to the health care provider or calls to the hospital nursery unit, it appears that more group 2 mothers made contact. Thirteen mothers in group 2 made a total of 26 calls or visits, compared to 12 mothers in group 1 who made 19 calls or visits and 11 mothers in group 3 who made contact 16 times. More group 2 mothers utilized the nurses in the newborn nursery for questions and concerns compared to the other groups, with 8 of the calls directed to the nursing staff. In contrast, only 2 mothers in group 3 and 1 mother in group 1 utilized the hospital staff. One group 2 mother had a concern that she directed to the visiting nurse regarding her infant. Jaundice was the most frequent reason given for contacting the infant's health care provider or the hospital nursery unit. Six group 1 infants had their blood drawn a total of 13 times, compared to 7 group 2 infants who had their blood drawn a total of 20 times and 4 group 3 infants who had their blood drawn a total of 7 times. It can be

speculated that many of the early discharge infants were assessed for jaundice solely on the basis of the time of hospital discharge, in contrast to infants discharged later who may have been well-screened for this condition prior to discharge. Three middle discharge infants had cord problems but none of these had infections that required antibiotics. There were 4 infants in group 3 who had discharge from their eyes compared to 1 infant in group 1 who had this problem. There was a lower distribution of the remaining questions or problems that caused mothers to notify a health care professional (Table 9).

Research Question Two

Research question two stated:

> What reasons does a woman have for selecting her length of hospital stay after normal delivery?

As can be seen in Tables 10, 11 and 12, the breakdown of reasons for selecting a given length of hospital stay varied considerably among the three groups of women. Although both groups 1 and 2 selected no adequate insurance as their primary reason for leaving when they did, 15 of the early discharge women (78.9%) gave this as a reason compared to 9 middle discharge women (45%). Nine early discharge women (47.3%) felt they rested better at home, but only 4 middle discharge women (20%) believed this to be a reason for leaving when they did. Three early discharge women (15.8%) considered the desire to be home

Table 10

Reasons Reported for Discharge Time: Early Discharge Group (12-24 hours)

Reason	N	%[a]
No adequate insurance	15	78.9
More rest at home	9	47.3
Felt ready/confident	5	26.3
Desire to be with family	3	15.8
No help at home	1	5.3
Friends recommended early discharge	1	5.3
Anxious to reestablish home routine	1	5.3

Note. Respondents were allowed to report more than 1 reason.

Table 11

Reasons Reported for Discharge Time: Middle Discharge Group (25-48 hours)

Reason	N	%[a]
No adequate insurance	9	45.0
Desire to be home with family	7	35.0
Felt ready/confident	5	25.0
More rest at home	4	20.0
Dislike of hospitalization	3	15.0
Anxious to reestablish home routine	2	10.0
Had help at home	1	5.0
Stayed longer to learn information	1	5.0
Favorable prior experience with early discharge	1	5.0

Note. [a] Respondents were allowed to report more than one reason.

Table 12

Reasons for Discharge Time: Late Discharge Group (> 48 hours)

Reason	N	%[a]
More rest in hospital	8	40.0
Felt ready/confident	6	30.0
Adequate finances/insurance	5	25.0
Apprehensive about psychiatric safety	4	20.0
Doctors encouraged longer stay	4	20.0
Desire to be with family	2	10.0
Physiologic discomfort	2	10.0
Had help at home	1	5.0
Stayed longer to learn more information	1	5.0

Note. [a] Respondents were allowed to respond with more than one reason.

with their families as an important reason for leaving early, while 7 middle discharge women (35%) felt this was an important consideration. Five women in both groups 1 and 2 stated that feeling ready and confident to go home was an important consideration. Three group 2 women chose their dislike of hospitals as a reason for leaving when they did. This was not listed as a reason among the women in group 1.

To contrast the early and middle discharge group, 8 of the women in the later discharge group (40%) felt they rested better in the hospital. Other important reasons were the following: 6 women (30%) stated that they felt ready and confident, 5 women (25%) felt they had adequate finances or insurance, 4 women (20%) felt apprehensive about the physiologic safety of leaving any earlier, 4 women (20%) followed their doctor's encouragement to stay longer,and 2 women (10%) had physical discomfort which kept them in the hospital longer. One woman in each of the 3 groups responded with the reason that she had adequate help in the home.

Research Question Three

Research question three stated:

> Are there differences in maternal-directed health care teaching and methods of post discharge follow-up for each of the three groups of women studied?

The head nurses of the labor and delivery, postpartum

and newborn nursery units were consulted in regard to possible differences in the teaching given to the mothers by the nursing staff. The researcher was assured that the teaching was standardized in a checklist format and that all women received the same quantity and quality of postpartum and postnatal teaching. For those mothers who had delivered for the first time and for those with individual needs, teaching was expanded or modified to better meet those needs. Teaching for all was begun after the woman had recovered from the labor and delivery experience and felt ready to actively listen to and participate in the instructions. A concern shared by the head nurses was that the women who chose to go home within 12 to 24 hours might feel overwhelmed and unprepared to really listen to so much information in so short a period of time. All women who self-selected a discharge time of 12 to 36 hours postpartally received at least one home visit by an early discharge nurse who was employed by the hospital. There was no additional charge for this service. The women were visited by the registered nurse between the 3rd and 5th postpartum days. In a few cases, the women did not live in the city. Telephone visits were made for this select group. For most women, the visit time averaged about 1 hour but varied depending on the individual women's needs. During the visit, both the mother's and newborn's vital signs were taken, an assess-

ment was performed, self and infant care tasks were discussed or reinforced and problems or potential problems were identified. If a women needed further health care teaching or a referral to the physician, this was accomplished. In some cases, the early discharge visiting nurse notified the physician of problems or potential problems. When the early discharge nurse felt it was indicated, a second or third home visit was scheduled at no additional charge to the patient.

In general, the earlier the infants went home, the sooner they were scheduled for a follow-up examination by the infant's health care provider. Many of the infants in the first group were seen between the 2nd and 5th days of life by the pediatricians, often for follow-up of bilirubin levels. Many of the group 2 infants were also examined by their physician during the first week of life, merely because they were discharged in less than 36 hours. The remainder of the mothers in the study were told to schedule a visit for when the baby was about 2 weeks of age.

As part of the questionnaire, study participants were asked to recall salient areas of the health care teaching they received while in the hospital. Table 13 shows the percentage of what was recalled by the women in each group. Although no statistical significance was noted among the three groups of women in their recall of

instructions, several trends in the data are evident. From decreasing to increasing frequency, with the group 1 women recalling least frequently, the group 2 women more frequently and the group 3 women most frequently, the following instructions were recalled: breastfeeding, care of self and birth control methods. Reverse trends were also noted, with group 3 women recalling the least and group 1 recalling the most information in the following categories: how a newborn acts, change in lifestyle, change in sex life, awareness of potential problems and the breast self-exam. In addition, more group 1 mothers recalled hearing about infant bathing techniques than the other groups and the greatest percentage of group 2 mothers recalled learning about navel care, the fatigue they may experience following discharge and the use of a thermometer.

Another finding of interest is the number of women who recalled hearing about fatigue. Only 57.9% of group 1 women and 63% of group 3 women recalled hearing information in this area, compared to 70% of the women in group 2. However, during the assessment visits conducted by the investigator, it was determined that there was a statistically significant increase in the incidence of postpartum fatigue among the group 3 mothers, but there were no complaints of fatigue among the women in group 1.

In theory, all the women were given the same

Table 13

Proportion of Mothers Who Recalled Instructions Pertaining to Postpartum Care

Instruction Item	Discharge Groups					
	12-24 hrs		25-48 hrs		> 48 hrs	
	n	%	n	%	n	%
Bathing infant	14	73.7	11	55.0	12	63.2
Navel care	17	89.5	19	95.0	18	94.7
Bottlefeeding	7	36.8	5	25.0	6	31.6
Breastfeeding	13	68.4	14	70.0	15	78.9
How newborn acts	9	47.4	9	45.0	7	36.8
Interpreting newborn's cry	7	36.8	7	35.0	7	36.8
Change of lifestyle	6	31.6	3	15.0	5	26.3
Care of self	15	78.9	18	90.0	19	100.0
Fatigue	11	57.9	14	70.0	12	63.2
Change in sex life	4	21.1	4	20.0	3	15.8
Birth control methods	6	31.6	8	40.0	9	47.4
Awareness of potentially serious problems	17	89.5	16	80.0	11	57.9
Using thermometer	8	42.1	11	55.0	5	26.3
Breast self-exam	12	63.2	11	55.0	10	52.6
Other	2	10.5	2	10.0	2	10.5

Note. Only 19 mothers in the later discharge group participated in the recall of instructions portion of the questionnaire.

information regarding care of the newborn's umbilical stump. It can be hypothesized that the time that the umbilical stump falls off may be a reflection of the mother's comprehension of the teaching she received regarding navel care (the more frequent and judicious the use of rubbing alcohol around the infant's navel, the sooner the stump will dry and slough off) (Avery & Taeusch, 1984). Although not statistically significant, the group 1 infants lost their umbilical stumps close to 2 days earlier than the other two groups. The mean time of "fall-off" among the group 1 infants was 9.5 days. The average time was 11.3 days in group 2 and 11.1 days in group 3, yet only 89.5% of the mothers in group 1 recalled hearing about navel care, compared to 95% of the group 2 mothers and 94.7% of the group 3 mothers.

CHAPTER IV

SUMMARY, RECOMMENDATIONS, AND APPLICATIONS

Summary

This research study was undertaken to determine the effects of early hospital discharge on health outcomes among mothers and their newborn infants, to determine whether there is a relationship among demographic characteristics and the length of hospital stay, to identify reasons for a woman's choice of hospital discharge time and to determine possible differences in health care teaching and methods of follow-up for each of three groups of women. There has been no prior documented research on maternal-infant health outcome comparisons based on length of hospital stay that involved two early discharge groups with a control group.

The 59 women who participated in this study were fairly homogeneous demographically. They tended to be from a Caucasian, middle class and fairly well-educated population. Slightly more than half of the subjects practiced the LDS religion. The majority of subjects were employed during their pregnancies, had on the average of between two and three children and most had attended

childbirth education classes during at least one of their pregnancies. There were no significant relationships among parity, demographics and the length of hospital stay. In general, the women who self-selected early discharge tended to have lower annual incomes than those who elected to remain hospitalized longer.

The findings from this study support other studies that have found early discharge to be physiologically safe for mothers and their infants. The results of this study, in fact, suggest that early discharge may be even safer for women than remaining in hospitals for more than 48 hours after childbirth. These findings are somewhat paradoxical to those found in the literature.

The increasé in numbers of problems among women in the later discharge group above those reported in prior studies, as well as the increase in physician contact regarding infant problems for all groups were surprising findings. As such, these findings have implications for health care professionals regarding predischarge anticipatory guidance and health education for the childbearing family.

There was a statistically significant increase in postpartal maternal fatigue among the long-stay group as compared to the short-stay group. Another statistically significant finding was an increase in the number of reported postpartum problems among the women in the latest

discharge group compared to the women in the earliest discharge group. The null hypothesis was rejected, that is, women who go home very early after childbirth tend to have less fatigue and fewer numbers of postpartum problems. However, both maternal and infant problems that arose were generally not life threatening and, without exception, did not require rehospitalization for either mothers or their infants. The 3 newborns who required phototherapy for elevated bilirubin levels received such therapy in their homes. None of the reported maternal problems could be directly attributed to the length of hospital stay. Although not significant, more infants in the early and middle discharge groups had jaundice, but most of the infants who required medical treatment were in the middle discharge group. In general, the earlier the discharge time, the sooner the infants were seen by the health care provider. For all three groups, the infant's health care provider was contacted more frequently than the woman's health care providers. When the women contacted their health care provider, their concerns tended to be more specific and usually dealt with abnormal conditions requiring medical treatment or medication. In contrast, most of the problems regarding the infants tended to be not as serious and the medical advice given for these problems was generally reassuring in nature.

No adequate medical insurance was the reason given

most often by the women in the early and middle discharge groups for choosing an early discharge. Additional reasons given by women in the earliest discharge groups were, in order of decreasing frequency: more rest at home, felt ready and confident and desired to be home with their families. The middle discharge group ranked the desire to be home with their families as the second most important reason, followed by felt ready and confident, more rest at home and a dislike of hospitalization. To contrast the women who self-selected early discharge, the most frequent reason given by the latest discharge group was the belief that they rested better in the hospital. This was followed in decreasing order by felt ready and confident, adequate finances or insurance, apprehension about the physiologic safety if they left earlier and encouragement by their physicians to remain longer.

With the study participants being from a fairly homogeneous population, it is speculated that the varying responses from the women in the different groups may be due to differing attitudes about the childbearing process. The two early discharge groups may be hardier in nature, viewing the birthing process as a positive and normal life experience. As such, they may have accumulated more knowledge prenatally, have greater family support and be more anxious to establish self-care and care of their babies at home. By contrast, women in the later discharge

group may have viewed childbearing as more of a disruption in their normal lifestyle and view the hospital as the place for recovery and rest, or as the place where learning about self-care and infant-care occurs. With the incidence of fatigue being higher among the women in the later discharge group, one can speculate that more may be expected of these later discharge women once they go home. Their families may rationalize that the women got their rest in the hospital. Furthermore, it could be rationalized that now that these women are finally home, it is appropriate that they return to their usual tasks and lifestyles.

The trend toward a lower annual income among the earliest discharge group and the lack of medical insurance accounts for the highest frequency of responses being "inadequate insurance" as the reason for early discharge. Indeed, 48 women (81.4%) who participated in the study had medical insurance. Among the 11 women who did not carry insurance, 9 were in the early discharge group and 2 were in the middle discharge group. Many of the early discharge women had no choice but to leave the hospital early, recover at home and work hard to apply learned principles of self and infant care.

Another point to consider in the interpretation of responses is the early discharge home follow-up program provided by the hospital. All of the earliest discharge

group and about half of the middle discharge group of mothers received a home visit by a qualified registered nurse during the early puerperium.

All subjects were given essentially the same instructions regarding postpartum self-care and postnatal care prior to discharge. Those who left the hospital within 36 hours postdelivery automatically received a home follow-up visit by a registered nurse. Precrisis intervention and the additional anticipatory guidance provided by the nurse in the home may have accounted for the lower incidence of postpartum problems, especially among the earliest discharge group, although approximately one-half of the middle discharge group also received the service. Many infants who left the hospital within 36 hours were seen by their health care providers within the first week following discharge, often on the basis of the time of discharge. Unless problems arose, those infants who left the hospital after 36 hours were seen at the traditional time of 2 weeks. Women in all groups were instructed to schedule a follow-up visit with their health care providers at 6 weeks postpartum.

Conclusions

This study has shown that an early hospital discharge time within 24 hours and between 25 to 48 hours is medically safe for both mothers and their newborn infants. Unexpected findings of this study indicate a reduction in

subjective maternal fatigue and fewer postpartum problems among women who leave hospitals between 12 and 24 hours as compared to those who are discharged at more traditional times of greater than 48 hours following delivery. Otherwise, there were no significant differences in health outcomes among study participants from the three designated groups.

The researcher also concludes that there are no differences among demographics, parity and length of hospital stay. In regard to reasons why women choose to leave hospitals at the time they do, those who self-select early and middle discharge times believe inadequate insurance to be the most important reason. Those who leave early also believe they rest better at home. Women who leave hospitals between 24 and 48 hours also have a strong desire to be with their families. Women who go home after 48 hours believe they rest better in hospitals. In addition, they feel ready to leave when they go home.

There were no essential differences in health care teaching among the three groups of mothers and infants. Those who left the hospital within 36 hours received a home follow-up visit by a registered nurse at 3 days postpartum.

Research Bias and Limitations

Due to the restrictions of sample size, the purposive sample procedure used, the strict criteria for participa-

tion and the lack of variance in the study population, application of these findings to other settings is limited. Recommendations from a similar study conducted by Lemmer (1985) were applied by this investigator. By replicating portions of the 1985 study in a different hospital population, it was hoped that a more heterogeneous group of women could be obtained. Unfortunately, such a population was not available. Possible explanations are that the purposive sampling procedure, strict criteria required for participation and use of only one private hospital for data collection accounted for the homogeneity among participants. Adolescent mothers were excluded in the researcher's efforts to screen a low-risk sample of women.

When purposive sampling and a static-group comparison design are used, the researcher has no basis upon which to judge the initial equivalence of the three groups. It cannot be concluded that early discharge causes postpartum complications. There may be several explanations for the postdelivery differences among mothers and their infants. Campbell and Stanley (1963) refer to this design as preexperimental due to these irreconcilable differences. The researcher studied a control group which matched the other groups based on standard criteria for all participants. These controls did not completely compensate for the absence of randomization. Two ways in which lack

of compensation for the lack of randomization would be better achieved with pretesting or collecting data over a longer period of time.

Internal validity is the minimum treatment of the subjects that enables the research findings to be interpretable (Levy & Lemeshow, 1980). The researcher must address the issue of whether the experimental treatment made a difference in the specific experimental instance. There are nine classes of extraneous variables that constitute internal validity. If not controlled, they might produce confounding results with the effect of the experimental stimulus.

The first of these threats to internal validity is history. History refers to the specific events occurring between the first and second measurements, in addition to the experimental variable (Campbell & Stanley, 1963). Because women and infants were observed initially in the hospital and observed a second time 2 weeks later, history could have produced confounded results. Related to history is maturation, which is the process that occurs as the result of the passage of time (Campbell & Stanley, 1963). Maturation in this study was another source of possible bias and included such variables as postpartum recovery and wound healing, as well as maternal-infant changes that occurred with little or no medical treatment. Selection biases were a third source of concern in this

study. The possibility may exist that differences in subjects were due to initial differences, rather than the effects of early discharge. The use of purposive sampling in this study resulted in the differential selection of respondents from the comparison groups. A fourth problem with this study design was experimental mortality, or the differential loss of respondents from the three groups. A fifth threat to internal validity was the interaction of the effects of selection biases and the experimental variable. A sixth threat was the interaction of selection biases and maturation. Even if the groups had been originally identical, the differences in drop-out rates may have affected the findings.

Three threats were well-controlled by the sampling methods and design chosen for the study. The first is testing in which the effect of taking a test upon scores of a second testing could have altered the results (Campbell & Stanley, 1963). Only one interview was conducted in this study. A second threat controlled by the design was instrumentation in which changes observed or scores used may produce changes in the obtained measurements (Campbell & Stanley, 1963). In this study, one interviewer recorded data for all participants, questions were phrased in the same manner and the same format was used for each interview. Only the phrases contained within the brackets were stated or asked to each

mother in the physical assessment interviews. The statements in the childbirth experience questionnaire were read to each participant. A third threat that was controlled using this design and method of sampling was statistical regression, in which groups were selected on the basis of their extreme score. Women and infants were approached and selected on the basis of having met strict criteria. The sample of women and infants was taken from a "low risk" or "normal" maternal-infant population, rather than the skewed population of the "high risk" or "abnormal" mothers and infants.

External validity refers to the type of population, settings, treatment variables and measurement variables to which the results of this study can be generalized (Polit & Hungler, 1983). In selecting this design, the researcher had no formal means of certifying that the groups would have been equivalent had it not been for early or middle discharge times. Because of the women's self-selection of time of discharge, random selection would not have been feasible. This limits the generalizability of the results. However, matching an antecedent background other than meeting the study criteria and women's choice of time of discharge would have been ineffective, unfeasible and possibly misleading. Because a similar study was conducted by Lemmer (1985) at a different hospital in the same area with similar findings, the results of this

investigation could potentially be generalized to the childbearing population in the area of Salt Lake City, Utah.

Recommendations

It is felt that this study should be repeated using a larger sample size consisting of a more heterogeneous group of mothers. In addition, replication of this study to include populations who are at greater risk for postpartum problems (i.e., teens and black mothers) could potentially yield different results.

Further research is needed to compare home follow-up visiting nurse programs with hospitals not providing this service in order to determine if health outcomes are improved and women's learning needs are better met with postpartal home follow-up care. Because Utah has a skewed population with regard to religious affiliation, parity, ethnic background and childbearing practices, research is needed in large metropolitan hospitals in other areas that provide a greater variety of discharge programs for a broader cross-section of postpartum women. Findings from such studies would be more generalizable to the population of American childbearing women.

Due to time restraints, this investigator was unable to follow mother-infant dyads throughout the puerperium as originally planned. None of the studies reviewed in the literature discussed findings that covered the entire 6-

week postpartum period. Such research would be invaluable in providing a more thorough and accurate picture of true health outcomes during this stressful time in a woman's reproductive cycle and would fill many current gaps in nursing literature.

More research is needed in the area of postpartal maternal fatigue. The findings from this study that there is a statistically significant increase in fatigue among women who leave hospitals at traditional times seems paradoxical to what logic would dictate. It has been suggested that failure to obtain sleep results in a delay of the restorative processes of the puerperium and a sleep hunger that persists for many days (Ziegel & Cranley, 1984). Fatigue results in women feeling more prone to postpartal depression and for some, this extends well into the puerperium (Gruis, 1977). Thus, it would seem that women who choose a very early discharge time would be more susceptible to symptoms of fatigue. A proposed explanation for this unexpected finding in need of further research is the possibility that progression from the taking-in phase (dependency) to the taking-hold phase (more independent) that Rubin (1967) described occurs more rapidly when the women is in familiar surroundings among people with whom she is most comfortable (Ziegel & Cranley, 1984). It is felt by this investigator that the degree of fatigue encountered among the study participants

suggests that there are many women with unresolved postpartal concerns. This is another issue warranting further research.

In this study, most telephone calls and follow-up visits for all groups of mothers dealt with benign newborn conditions. This is not a unique finding. In a study conducted by Gruis (1977), mothers sought help most frequently for concerns and problems related to the newborn, yet 22% of the concerns did not require clinician consultation. The author suggests that such lack of consultation was due to the fact that there was no help available. In a study conducted by Sumner and Fritsch (1977), the largest number of postpartal questions dealt with infant feeding, colic, rashes, sleep/cry and postpartal adjustment. Greenberg (1981) found that most postpartum calls to health care providers dealt with infant care. This investigator is in agreement with Gruis (1977), that the support system that exists at the present time is inadequate to meet a woman's postpartal needs for learning. This investigator also agrees with Larsen (1966) who found the early postpartal period to be the time of greatest stress during the childbearing year.

When is the new mother most ready to learn about self and infant care? This is an important clinical question in need of research-derived answers. Currently, there is much conflict and debate regarding this issue, but the

literature does agree in some areas. In studies conducted by Gruis (1977) and Adams (1963), it was found that pregnancy is a time in which the mother is focused on herself and the authors did not recommend this as the best time for learning about infant care. Adams concluded that readiness for learning can best take place after the mother has seen and interacted with her infant. Adams also found that when mothers requested rooming-in, they were most ready to be instructed by the second postpartum day. When rooming-in was not requested, women's greatest readiness for learning occurred at about 1 week postpartum. More research is needed regarding the timing and readiness for postpartal maternal learning, as well as the quantity and quality of teaching conducted by professional nurses in the postpartal care setting. Such research could be especially beneficial to the early discharge population.

Applications for Nursing Practice

The information gained from this investigation can add to the growing body of nursing knowledge. Professional nurses in childbearing settings can safely recommend early hospital discharge to low-risk postpartum women and their healthy term infants provided they have a good knowledge of self-care and infant care principles, at least 1 home visit by a qualified registered nurse, good physical help and emotional support in the home and a list

of resources they may call upon should problems arise. According to the nursing literature, early discharge should be recommended only when home follow-up nursing care is provided. It should be realized that this study took place in a setting where postdischarge home follow-up was provided for those women who self-selected a hospital stay of 36 hours or less. It is interesting to note that the hospital where the study took place was the only hospital in the large community that offered such a follow-up program. That such a disparity exists between nursing research and reality is unfortunate and alarming. It is the belief of this investigator that there is an urgent need to offer follow-up home nursing visits to all postpartum women, regardless of length of hospital stay. A real challenge exists for the postpartum and public health nurse who must cope with this issue. Every woman should be offered this care as an option. Should a woman leaving the hospital state that she does not desire this service, she should be informed that she may change her mind later and receive a visit. In addition, she should be given a written list of resources to contact if problems or concerns should arise.

Pridham, Hansen, Bradley and Heighway (1982) found that physicians were called upon more frequently by postpartum women than other professionals for advice. The average number of issues for which clinicians were

consulted in relation to the mean number of issues reported by mothers was small. The study also revealed that few of the contacts made to physicians were regarded as urgent by the mothers. Physicians tended to be consulted for illness concerns, while nurses' advice was sought for infant feeding concerns. Gruis (1977) summarized the problem well by commenting that women have more on their minds concerning their infants than what comes to the attention of health care providers. Based on findings of this study and the above studies, it is felt that nurses need to have a greater role in community outreach services for the postpartum family.

This investigator is in agreement with Gruis (1977) that the professional nurse is in an ideal position to meet two major postpartum needs: those related to factual information and those related to ego strengthening. The nurse in the antepartal setting can activate the coping strengths in advance of the stressors by helping families to predict and anticipate upcoming areas of stress prior to the crisis. This can be accomplished, in part, by helping expectant mothers to explore ways of maintaining jobs or personal interests while assuming care of the infant, discussing creative ways of finding rest and finding alternative means of securing help in the home postpartally. The American core values of autonomy and independence may prohibit the use of supportive resources.

The role of the nurse who works with women choosing early discharge may solely be to offer permission to use available resources within the community.

Maternity clinical specialists on postpartum units would be invaluable in providing staff nurses with inservice education and program development. Additionally, Master's-prepared clinical specialists could provide group leadership for postpartum families, discharge planning and telephone follow-up services. Daily classes could be conducted on the postpartum unit to discuss breastfeeding and infant care, as well as the public performance of a Brazelton Neonatal Behavioral Assessment (Brazelton, 1984) for the group of new parents. This would provide an excellent way of stimulating discussion among the families in regard to distinguishing normal from abnormal characteristics. By attending these classes, new parents can feel better prepared to begin life at home with their new addition to the family. During the group sessions, a comprehensive discussion of jaundice could be directed by the clinical specialist that would include identifying when jaundice in the newborn is a problem and appropriate means of dealing with the temporary condition. Finally, the clinical specialist could encourage couples who have had children to actively participate in group discussions that would be geared toward the first-time parent. Because Petrowski (1981) showed that repetition

is an essential factor for enhancement of learned principles, the information given to new parents in group discussions should, in no way, replace the traditional bedside postpartum teaching. Group sessions should be considered methods of repetition and reinforcement for learned principles.

Rooming-in should be encouraged as much as possible because the presence of the infant provides an excellent stimulus for discussion for newborn reflexes, characteristics and patterns. This discussion could provide a way of alleviating concerns that could arise later when the infant is home.

First-time mothers and fathers should be encouraged to care for infants and talk with more experienced mothers during their pregnancies and to care for their infants during their postpartum hospital stay. In addition, films and pamphlets should be available, particularly those that emphasize infant feeding, newborn characteristics, crying behaviors and methods of coping with fussy periods.

To prevent fatigue and promote readiness for learning, the postpartum nurse should place a high priority upon the woman's need for rest immediately following delivery. During this time, the mother's first emphasis is that of restoring herself physically. After she rests, the postpartum woman may be receptive to bodily changes she has experienced and can anticipate the next several

days. This is an excellent time for the postpartum nurse to discuss ways of dealing with physical discomforts (Gruis, 1977).

Since most contacts regarding infant problems are directed to the primary health care provider, the clinic nurse needs to be particularly alert for underlying maternal concerns and the new mother's needs for support and guidance. Nurses in clinic settings need to be aware that when mothers ask questions about infant care, they often have other underlying concerns (Gruis, 1977). A good method of dealing with the "real" issues of concern is through the use of open-ended questions like, "What have your first few days at home been like?" To help bridge the gap between hospital and home, the nurse employed in the office of the delivering physician could contact new mothers by telephone during the first postpartum week.

In this study, women who contacted their health care providers tended to have problems that were fairly serious in nature. A final suggestion is that new mothers schedule a postpartum follow-up visit with their physicians routinely at 2 weeks, in addition to the traditional 6-week postpartum visit.

APPENDIX A

LETTER TO SUBJECTS AND CONSENT FORM

Congratulations on the birth of your baby!!

My name is Helen Leopardi. I am a Registered Nurse and a graduate student at the University of Utah College of Nursing.

I am conducting a research study to find out how mothers and babies get along if they go home within 48 hours of giving birth. At least 20 mothers and infants who go home with 24 hours of delivery, 20 mothers and infants who go home between 25 and 48 hours and 20 mothers and infants who go home later than 48 hours after giving birth will be involved in the study.

I would greatly appreciate your participation in this study. If you wish to do so, please read the following Consent for Participation in Investigational Study and sign the consent form for both yourself and your infant. I would be pleased to answer any questions you might have about the study.

Thank you.

Helen G. Leopardi
R.N., B.S.N.

Consent for Participation in
Investigational Study

Title of Study: Health Outcomes for Mothers and Infants Following Early Hospital Discharge

Information:

The purpose of this research study is to learn how mothers and infants get along if they go home from the hospital within 48 hours after giving birth.

Participation in this study will involve a visit to your home by the investigator when your baby is about 2 weeks old. You will be asked to fill out a 4-page questionnaire and answer some questions about your baby's and your health. This will involve approximately 1 to 1 1/2 hours of your time. Only one home visit will be required.

No part of this research study is experimental. Risks involved in this study are minimal. The time spent for the visit in your home may be a possible inconvenience. Some women may feel anxious or embarrassed about sharing concerns or answering questions about their baby's or their health.

Benefits of the study to you include the opportunity express concerns you may be having and an increased knowledge of your health status and your baby's health status. Benefits of the study to others include obtaining information which will assist health care providers in giving better care to women and their infants in the future.

All information given to the investigator in response to questions and on the questionnaire will be kept strictly confidential. No names will be used in this study. All forms used will be coded by number. At the end of the study, all of the information gathered will be destroyed.

There is no compensation for taking part in this study. If problems requiring treatment are identified during the home visit, you will be referred to your own health care provider. In the event of injury, facilities for your care are available; however, the investigator assumes no financial responsibility nor is other compensation available from the hospital. If necessary, further information can be obtained from the Institutional Review

Board Office at the University of Utah (581-3655).

You are free to choose to participate in this study and you are free to drop out of this study at any time without penalty. If you do not want to answer a question, you do not have to do so.

The investigator will answer any questions that you might have about this study. The investigator, Helen Leopardi, can be contacted by telephone at 298-7101 or by mail at the University of Utah College of Nursing, Family Nurse Clinician Program, 25 North Medical Drive, Salt Lake City, UT 84112.

Consent

I have read the foregoing and my questions have been answered. I desire to participate in this study and accept the benefits and risks. I give permission for information gathered in this study to be released to Helen Leopardi. A copy of the consent document has been given to me.

_____
Signature of Patient

_____
Witness

_____
Date

If the patient is a minor, or otherwise unable to consent, complete the following:

Upon consideration of the possible benefits and risks of this study as outlined, I approve the participation of _____ in this study.

_____
Signature

_____
Relationship

_____
Witness

_____
Date

APPENDIX B

DATA COLLECTION INSTRUMENTS

Maternal and Infant Physical Assessment Forms

The maternal and infant assessment forms that were developed by Sr. Corinne Lemmer (1985) were used to measure health outcomes for mothers and infants following postpartum hospital discharge. Permission was obtained from Sr. Lemmer to utilize the instruments in this study.

For further information regarding these instruments, or permission to utilize the tools, please contact:

Sr. Corinne Lemmer
% College of Nursing
University of Utah
25 S. Medical Drive
Salt Lake City, UT 84112

Childbirth Experience Questionnaire[1]

Code Number_____

Your answers to the following questions will be greatly appreciated in helping provide a picture of your experiences during this time in your life and about those things which may have influenced your decision to choose or not to choose going home from the hospital soon after you had your baby.

Please read each question and circle the appropriate answer(s) or fill in the blank.

* * * * * *

1. Did you attend any childbirth or infant care classes before your baby was born:

   yes no

2. Did you receive individual or group instructions regarding self-care or care of your infant after your baby was born but before you were discharged from the hospital?

   yes no

   If yes to "number 2," please circle any of the following items that were covered in the instructions you were given:

   (a) how to give the baby a bath
   (b) how to take care of the baby's navel (umbilical stump)
   (c) how to bottle feed the baby
   (d) how to breastfeed the baby
   (e) how a newborn baby acts
   (f) what a newborn baby's cry means
   (g) how a baby will change my lifestyle
   (h) how to take care of the myself after the baby was born
   (i) about the fatigue (tiredness) I might experience
   (j) how having a baby may change my sex life
   (k) about methods of birth control

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[1] Permission to adapt and reprint obtained from Sr. Corinne Lemmer. Lemmer, Sr. C. (1985). Effects of early hospital discharge on mothers and infants. Published master's thesis, University of Utah, Salt Lake City, UT.

(l) things to watch for and when to notify my baby's or my health care provider for potential health problems.
(m) how to use a thermometer to take my baby's or my temperature
(n) other (please indicate)_____
_____

3. Did you have someone to help you in your home during the first week you were home?

yes no

4. Did a nurse visit you at home during the first week you were home?

yes no

5. Did you receive a call from the hospital to see how you were doing?

yes no

6. Were you satisfied with the length of time you spent in the hospital?

yes no

Comments: _____
_____

7. What is your primary occupation?_____

8. Were you employed during your pregnancy?

yes no

If yes, do you plan to return to work?

yes no

How soon?_____

Do you plan to return to work:

(a) full-time (b) part-time

9. Do you have private insurance that offers incentives or rebates for leaving the hospital early?

yes no

The following information would be appreciated for statistical purposes. All information you provide will be held in strict confidence.

10. How many times have you had a pregnancy that resulted in the birth of a baby who was at least 28 weeks old or had a birthweight of at least 2 pounds and 4 ounces?

    _____

11. What is your age in years? _____

12. What was the last year of education you completed (circle):

    1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

    17+

13. What is your marital status?

    (a) single
    (b) married
    (c) separated from husband
    (d) divorced
    (e) widowed

14. What is your ethnic group?

    (a) Hispanic
    (b) Black
    (c) Caucasian (white)
    (d) Oriental
    (e) Native American
    (f) Other (please indicate)_____

15. What is your religious preference?

    (a) LDS (Mormon)
    (b) Jewish
    (c) Roman Catholic
    (d) Protestant
    (e) No religious preference
    (f) Other (specify)_____

16. What is your approximate income?

(a) less than $8,000/year
(b) $8,000-$14,999/year
(c) $15,000-$19,999/year
(d) $20,000-$24,999/year
(e) $25,000-$29,999/year
(f) $30,00 or more per year

17. How many hours after your baby was born did you leave the hospital?

_____

18. What was your most important reason for choosing to leave the hospital at the time you did?

_____

_____

19. What was the second-most important reason for choosing to leave the hospital at the time you did?

_____

_____

20. Would you recommend early hospital discharge (between 12 and 48 hours after giving birth) to others:

yes no

If you were discharged from the hospital <u>after 48 hours</u> of giving birth, please answer the following two questions:

21. Did you know that it was possible to leave the hospital early (between 12 and 48 hours after having your baby)?

yes no

22. What made you decide not to go home early, that is, between 12 and 48 hours after having your baby?

_____

_____

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